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An Automobile Plant's Production System*

Records for Taking Care of Stock Transfers—Time Studies a Special Feature—The Premium Wage System

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The elaborateness of the subdivisions in the various departments of the Packard Motor Car Company is typical of the methods which control the entire operations of the company. Similarly in providing for the various records, particularly in the matter of recording the movement of materials and in the conduct of the time-keeping operations, a large number of interesting forms are employed.

As suggested in a previous instalment of this article, the various divisions into which the plant is divided are conducted as separate units. Materials are transferred from one division to another, the stock being credited to the producing department and charged to the receiving department. In planning for the year's work the number of cars of certain models which it is believed the market will absorb are decided upon by the executive committee. This decision is sent in the form of a letter to the production department, where a schedule is

This Tag	must remain with !	IG Materia
through every	Department	
Date		
July No.		
Pinca No.		
FIRST No.		
Let No.		

Original Quantity in Lot	Belance Forwarded	
Rumoved by	Removed by	
Balance Remaining	Balanca	
	Remaining	
Removed by	Removed by	
Balance Remaining	Balance Remaining	
1		
Removed by	Removed by	
Bulance Remaining	Balance	
Remaining	Royalning	

Fig. 41-The Work Tag, Size 3x5 In.

worked out providing for the building of the cars throughout the year. This schedule is arranged to indicate the dates upon which the proper number of parts are required to be in each department in the various stages of completion, so that successive lots of finished cars may be delivered at definite dates throughout the shipping season. This schedule forms the general basis upon which the work in the factory is laid out, and each department head is advised of what is expected of his department according to this schedule.

To provide a record of the delivery of materials from one division to another, as castings from the foundry to the machine shop, a form known as an "internal shipper" illustrated in Fig. 40 is used. This is made up in triplicate, the original being the consignee's copy, second sheet the accounting department's copy and the third sheet is the copy retained by the division delivering the material, in this case the

2 G.W. & 7. CO. 16	encis			2			00	
od .		Deliver to		No. B 32	252			
" Shipped		Via Req. No. When 'Back Order No.		Req. No.	oq. No.			
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	d ped Back Ordered	Back Model—Part No.	Deliver to Deliver to Via When Charge Back Ordered Model—Part No. DESCRIPTION	POUNDRY DIVISION Deliver to Via When Charge Back Medel—Part No. DESCRIPTION Pieces	FOUNDRY DIVISION Deliver to No. B 32 Ped Via Req. No. When Back Order No. Charge " Date Back Model—Part No. DESCRIPTION SHIPPED Ploces Weight	POUNDRY DIVISION Copy of Deliver to No. B 32252 Ped Via Req. No. When Back Order No. Charge "Date DESCRIPTION SHIPPED Coeff Ordered Weight Coeff Description Weight Coeff Description Coeff Description Reg. Req. No.	POUNDRY DIVISION Copy Deliver to No. B 32252 Ped Via Req. No. When Back Order No. Charge " Date Back Model—Part No. DESCRIPTION SHIPPED Cost Value Ploces Weight	

Fig. 40-The Internal Shipping Order for Giving a Record of Material Transferred from One Department to Another

*Continued from page 1424 of The Iron Age of June 12.

OPERATION SHEET OPERATIONS TO BE PERFORMED IN ORDER WRITTEN Date Issued Replace Issue Print Size Piece No. Name Models Used for Parts or Assem. Material Make from Piece No. Dept. Std. Time Code Operations Tools Tool No.

Fig. 45-The Operation Sheet Which Gives the Foremen in the Several Departments the Order in Which Work Is To Be Done

foundry. Accompanying the material itself throughout all stages of its finishing the "identification work tag" shown in Fig. 41 is required. Upon this tag the signatures of the operator in each department are called for, spaces being provided for this purpose on the back. For obtaining stock from stockrooms the requisition form reproduced in Fig. 42 has been adopted, and it serves two purposes: First, for the drawing of all miscellaneous stock and supplies, in which case the number of the job or the account' for which the material is drawn is noted under the heading "charged to" and also where stock or supplies are required on another job than the one for which they were originally drawn, in which case this requisition form is used and the new job or account number is noted under the heading "charged to" while the original number is noted under the heading "crédit stock account."

In each department of the chassis division sub-stock-rooms are located. To cover the transfer of various materials from finished stock to the sub-stockrooms, or to assembly rooms for subsequent use to the operators, the "stock to stock transfer" ticket in duplicate form, shown

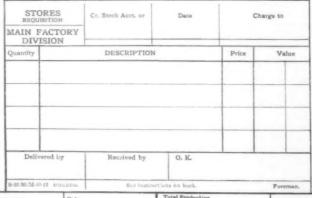
in Fig. 43. is employed. The regular stock transfer ticket Fig. 44 is made up in triplicate, the original being forwarded to the production office, the second copy being filed by the forwarding clerk and the third copy going with the material to the receiving department, where it is filed by the receiving department for its own record.

The foreman in each machine department has recorded on an operation sheet each detail of the work to be done on every part. This operation sheet is shown in Fig. 45. For each of these operations a time study has been made in accordance with the outline reproduced in Fig. 46. Temporary standard time study records are made from the detailed time study sheet on the duplicate tickets shown in Fig. 47. One copy goes to the time office and the other to department clerk in the factory. Permanent card records are made in the time office, as illustrated in Fig. 48, and the shop department clerk files a card record on the form reproduced in Fig. 49.

On the basis of time studies conducted in the various departments, the planning department issues to the time office and to the proper department an official notice of each standard time as it is determined on the standard time study record. These are filed by a premium clerk whose duty it is to see that under no condition is standard time placed on a time ticket for which he has not in his files a properly signed advance or official standard time.

The workman as soon as he has completed his present job, which includes when necessary the removal of the old

set-up, returns the tools covering the completed job to the tool crib, takes the finished stock with the yellow copy of the time slip to the stockroom where production stockrooms are provided, and then calls for his next assignment at the production clerk's desk. The turning in of finished stock at the completion of an operation is modified by circumstances. Inspection after each operation is required



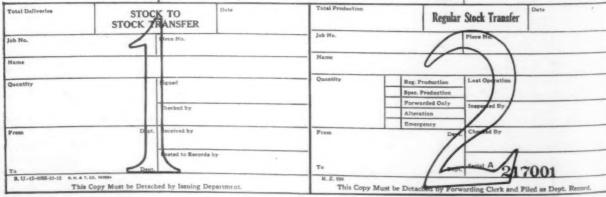


Fig. 43—The Stock to Stock Transfer.

Three of the Forms Used to Keep Track of Stock

Fig. 42—The Store's Requisition.

Fig. 44—The Regular Stock Transfer.

	Dept	TIME S'	TUDY		Piace No.		
	Man's Rate Mach. Mach. Per Hour. No. Name				Bpeed of Line Shaft	R. P. M.	
	Material	Observer		Date	Time Begun	AM. PM.	
			Per Minute		Time Tuken	Should Take	
	Description of Sub Operations	Tools Used	Speed Hand Fower	Cut First Second	d Third Average		
	1						
	2						
	3						
_	4						
		T		T	T		
	TOTALS						
	Time Finished	Total Elapsed	Time		Rate Per Hour of Work		
	Machine Conditions						
	Pirst Study	Pir	nt Study				
	Second "	Sec	Second "				
	Third "	Th	ird "				
	Remarks						
			1	Noted and			
				Approved		Speed Foreman	

Fig. 46-Outline of the Time Study Sheet Which Is Made Up for Each Operation in the Plant

and this may be done at the machine or inspector's bench, to make a delivery before the entire lot is completed the the work being delivered to the stockroom by truckers.

When the completed pieces are returned to the production stockroom and before they are inspected, the counter or the inspector counts the number of pieces returned and notes the quantity in the proper space on the face of the yellow time ticket. In every case the exact number of pieces assigned must be returned. The inspector then inspects the stock, notes the "defecpaid tive not for," "total paid

" "defective for. paid for," and the "quantity good" on the premium work time slips, signs his initials and sees that the tickets are turned over to the premium clerk at intervals during the day. If it is found necessary

Time Office Standard Time Record Type of Machine Date Date Time Date Time Date

Fig. 48-The Standard Time Record V Clerk of the Time

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ļ					
1					
1			-		
7					
1					

ments, made out on duplicate premium work time slips, Fig. 50, show the machine number, job number, piece number, operation and pieces in the lot. This ticket also indicates whether or not the workman is to be given set-up-time for the operation. When the job has been assigned the production clerk is required to see that the work-

Date	Dept.		Operation Bymbol		Piece Ho.	
Machine No.	Man's Rate	cts.	Set up Time	mis.	Standard Time	mis.
Material						
Name of Piece						
Description of Ope	ration					
Remarks						

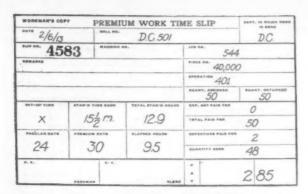
Fig. 47-The Standard Time Study Record Filed in the Time Office

Dept.		Piece No.				
Oper, Ho.	Operation	Machine No.	Standard Time	Set up Time		
				-		
2 407 4000 EL CE S. 45 Co.						

Fig. 49-The Department Clerk's Operation Record Card

inspector notes on the back of the yellow premium work time slip the "quantity inspected," "defective not paid for," "total paid for," "defective paid for," and the "quantity good," and holds it until the balance of the lot is received, when he will note the combined totals on the face of the slip and then the premium clerk

It is the duty of the production clerk in the various departments to assign jobs ahead for all the workmen. These assign-



The Premium Work Time Slip Which Is Made Out by the Production Clerks in the Several Departments and Is the Workman's Authorization to Do Work

man receives the stock covered by that assignment. workman hands the time slips covering his new assignment together with the green copy of the completed job which he will take from the rack to the premium clerk, who stamps "out" the green copy of the completed job and, after noting on it the elapsed time, places it in the "job finished" rack. He then stamps "in" the green copy of the new assignment and places it in the "job working" rack and at the same time hands the workman the yellow copy of the new assignment. Before the green premium time slip is placed in the "job finished" rack, the premium clerk enters on the daily time balance sheet the elapsed time for each day as registered on the back of the premium slips. The premium clerk checks the balance sheet with the departmental time book and sees that the total time for each man as shown on the premium slips agrees with the time posted in the time book before forwarding the premium slip to the time office. At the close of a pay period or, in case a lot is to be broken, the workman places this yellow premium work time slip with his completed work and delivers these completed pieces to the production stockroom or has the trucker take them to the stockroom. The production clerk then changes the original assignment to correspond with the number completed and at the same time makes out a new assignment for the pieces not completed, which will be the workman's next assignment.

Each premium worker must remove his ticket from the card rack and place it in the clerk's basket in the morning when he comes in and in the evening when he goes out, in order that the clerk may stamp each workman "in" when he begins and "out" when he finishes the day. A workman is not permitted to stamp "out" on a productive job in order to repair his tools or machine unless his assignment covering the repair job is assigned by the foreman personally. When, through no fault of the workman, the production clerk is unable to assign him a new productive job on the completion of the present one, owing to lack of stock, tools, jigs, etc., the foreman must either give him a slip on idle time account and permit him to stamp 'out" on the completed job, or lay the man off until work is available.

During the day as the yellow slips covering completed jobs come to the premium clerk from the inspectors, he matches them up with the green slips and notes the "quanity good," "defective paid for," "total paid for," "defective not paid for," and the "elapsed time" on each. All premium time tickets on which a standard time has not been used are turned over to the foreman for signature and notation. The premium clerk then signs both green and yellow slips and turns them into the time office on the morning of the next day. The time office, upon receipt of premium time tickets from the various departments, proceeds as follows:

- (a) Checks the standard time and machine number on the time tickets with the official record.
- Checks the number of pieces to see that the quantity is correctly copied on both slips.
 (c) Checks the standard hours and enters on both
- green and yellow slips.
 (d) Checks over the clock registrations on the back of the green slips and notes that the elapsed time is
- correctly carried over to the face of the slips.

 (e) Notes that all slips, both green and yellow, are signed by the department clerk, and all yellow slips showing pieces finished and accepted are signed by

- the inspector and all other yellow slips are signed by the foreman
- (f) Sets down workmen's regular day work on the green slips.
- (g) Computes the amount due the workman by reference to a premium wage table and notes the amount on both green and yellow slips.

The time office then makes out complete efficiency reports for each department each day covering all work done by premium workers, sending one copy to the foreman of the department for the benefit of himself and the time study man, and one copy to the planning department.

The yellow copies of the time slips are then returned to the department from which they came, where the premium clerk arranges to turn them over to the workman once a day. The green copies are posted to a premium pay-roll sheet showing date, elapsed hours, and amount earned and are then forwarded at once to the accounting department. The workman's pay for a given pay period will be computed from the premium pay-roll sheet. Should the total elapsed time, as shown on the premium pay-roll sheet, not agree with the total on the clock card, the time office will locate the date on which the error occurs and turn all the data over to a general clerk in the production department who will proceed to adjust the matter. the premium man works more than six and one-half hours on Saturday, or more than nine and one-half hours on other days excepting Sundays and holidays, he will receive his regular premium wage for the total number of hours worked plus one-half his day-work rate for the overtime,

The service department is simply an unusually large stockroom occupying the three floors of a large U-shaped building. Its sole function is the supplying of duplicate and repair parts to users of Packard cars and trucks. stock consisting of quantities of each part of every model now in service is maintained. It is conducted independently of the manufacturing department but does no manufacturing itself, buying its parts on order from the other divisions of the plant.

Swedish Crucible Steel Company's Expansion

Ground has been broken and work started toward the erection of the Swedish Crucible Steel Company's Canadian plant on the four-acre site recently purchased from the city at McDougall and Hanna streets, Windsor, Can-Construction work will be pushed as it is the intention to have the plant in operation by early winter. The first of the group of buildings is to be an administration building 45 x 100 ft., two stories. Adjoining this will be the first unit of the steel foundry, 100 x 125 ft. Both are to be of structural steel and reinforced concrete construction, with temporary ends for expansion as business de-This group will be located on the north side of Hanna street and on the south side of that street will be erected a gray iron foundry of similar dimensions and construction with the steel foundry.

Incorporation papers are now being prepared giving authority to capitalize at \$100,000, all of which has been subscribed for by stockholders of the Detroit plant. It is the purpose of N. L. Olson, president of the company, who controls the patents of the Olson adjustable tool steel plow point in the United States and abroad, to develop and man-The Swedish ufacture this product in the Windsor plant. Crucible Steel Company's plant at Detroit, Mich., has made fine progress in the two years of its existence. Although it has twice increased its facilities by additions, it is still unable to satisfy the demand for its product and further expansion is now being made by the enlargement of all departments.

A new application of the cinematograph has been found in the laboratories of Jonas & Colver., Ltd., Sheffield, England. A demonstration has been made showing the crystalline changes that take place during the pulling of a test piece of steel or other metal in the testing machine. It is the invention of B. W. Winder and it consists of a specially constructed testing machine to which are attached a microscope and a camera so that all the changes can be noted and photographs taken.

The relining of furnace Y of the Wickwire Steel Com-pany's plant at Buffalo has been completed and the furnace has been blown in.

A New Machine for Turning Bolts A Development in the Making of an Accurate Product in Large Quantifies

A two-spindle bolt turning machine is now being made by the Pawtucket Mfg. Company, Pawtucket, R. I., from the designs of George H. Webb, its treasurer and general

manager. It is a recognition of the demand for making, in large quantities and accurately, taper or straight bolts, particularly the former, finished smooth and held to size within 0.001 in. The finishing process is accomplished with a single cutter and the bolt will be straight and accurate to size and taper. The setting of the tools is a very simple operation. The ma-chine will have particular interest to locomotive works and railroad shops.

The machine is designed to turn bolts, either straight or taper, as stated, up to and including 1½ in. in diameter, 20 in. long. The greater claim is made on turning and finishing

taper bolts. With blanks forged on the four-hammer machine of the Pawtucket Mfg. Company's manufacture, the forging is accurate enough to require only grinding and buffing of the heads for the best class of bolts used on locomotives, such as connecting rod bolts, and with the turning done on the bolt turning machine and the top and under side of the head finished on the company's manufacturing lathe or bolt altering machine, the production of bolts is accomplished with both accuracy and cheapness.

Each of the rotating spindles, shown in the accompanying illustration, carries the bolt blank, and the inclined slides, which are brought into action by means of the hand feed wheels, shown one on each side of the machine, carry the straight or taper turning tools, as the case may be.

Straight work is done in one cut with a hollow mill. If desired, two can be used—one a rougher and one a finisher. For taper work there are two operations; one spindle is equipped with a roughing tool and the other with a finishing tool. The bolt is taken from the roughing spindle to the finishing spindle and the transfer is made without stopping the machine, and the roughing and finishing cuts occur simultaneously. A bolt taken at random from a pile of bolts being turned in the works of the Pawtucket Mfg. Company showed that it was brought to size with one cut, the micrometer fitting tightly at the figure desired and the finish being remarkably smooth; in fact, polished.

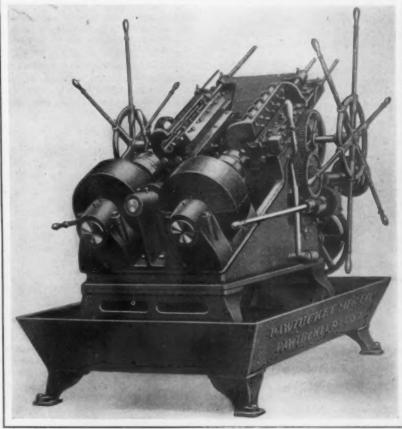
A feature of the machine is that the slides are inclined at an angle of 25 deg. with the horizontal, which is an arrangement promoting convenience in operating the machine, as well as keeping the chips and the emulsion or oil used out of the slides. An additional attachment, not shown in the accompanying illustration, is a footoperated clutch for releasing and stopping each spindle independently of the other, so that such work as straight bar or any odd shaped head that could not be used with a socket to do the driving can be fastened and held while

being worked upon with the finishing tool. The machine takes the bolt blank after the head has been formed on a heading machine and it will receive square, hexagonal or tee head bolts.

The machine is arranged to have four speeds on the feed and is equipped with a pump for returning the lubricant to the cutting tools. The hand feed is used for re-

turning the slides to the starting position, and also for squaring the bolt under the head, which is done without removing the bolt from its position while being turned, and also for entering the end of bolt blanks into the roughing and finishing tool. The machine weighs about 5000 lb. and takes a floor space of 47 in. x 80 in.

The Tivani Electric Steel Company, Belleville, Ont., Canada, has completed its and will begin operations June 23, making tool steel and steel castings directly from titaniferous iron ore by the Evans-Stansfield process. It is stated that the trial runs of the T. W. Evans is



A Machine Equipped with Two Rotating Spindles for Turning Straight or Taper Bolts

furnace have been quite satisfactory. T. W. I president and J. M. Wallace is general manager.

The New Cobalt Tool Steel

Various reports have been published lately regarding a new German tool steel known as "cobalt steel." tion sent out by the Becker Steel Company of America consists of a detailed report of extensive comparative tests of the new steel with numerous other tool steels. were made in the laboratory for machine tools of the Royal Technical High School at Berlin. Tools of uniform size were made from over 33 different kinds of tool steel, including the cobalt, selected from various sources-England and Austria as well as Germany. Each tool was made to cut in a lathe hard chrome-nickel steel of about 65 tons tensile strength, ordinary open-hearth steel of about 31 tons tensile strength and also cast iron of about to tons tensile strength. A cutting speed of 83 and 66 ft. per min. with a feed of 1 mm. per revolution and a cut of about 4 mm. thickness was employed in two sets of tests on the hard steel, while the cutting speed in the tests on mild steel was 83 ft. per min, with a feed of 2.5 mm. per revolution and a cut of about 10 mm, thickness. In the cast iron tests the cutting speed was 100 ft. per min. with a feed and thickness of cut the same as in the mild steel. In most cases three tests with each kind of tool were made, using the average results. The conditions for making all measurements and calculations were scientific. The duration of each test was determined by the dullness of the tool. This was measured by a manometer which revealed a certain pressure over the average.

The table of curves presenting graphically the results of these tests shows that in all four cases the average in cutting time of the cobalt steels exceeded those of the other steels two, three and more times according to the kind of test. The composition of the steel is not given. It is known both as cobalt and as iridium steel.

Coke and Iron Ore Freight Rate Decisions

Interstate Commerce Commission Orders Reduced Coke Rates to Mahoning Valley and Directs Pittsburgh and Wheeling Ore Rates from Lake Ports Equalized

Washington, D. C., June 17.—The Interstate Commerce Commission on June 13 handed down a series of decisions in connection with freight rates on coke and iron ore that are considered to be the most important within recent years.

In the case of the Coke Producers' Association of the Connellsville region against the Baltimore & Ohio Railroad Company and others the rate on coke from the Connellsville district to important consuming destinations was

cut on an average from 12 to 15 per cent.

In the case of the Youngstown Sheet & Tube Company against the Pittsburgh & Lake Erie Railroad Company a reduction is ordered of 15c per ton in the freight rate on coke from the Connellsville district to points in the Mahoning Valley of Ohio, and while the commission holds that rates to the Shenango Valley of Pennsylvania are unreasonable it decides that these rates are intrastate and therefore not subject to its order.

In the case of the Wickwire Steel Company, Buffalo, against the New York Central and that of the Wisconsin Steel Company, Chicago, against the Pittsburgh & Lake Eric Railroad Company the commission dismissed the complaints and sustained present rates on coke from the Con-

nellsville district.

In the case of the Pittsburgh Steel Company and others against the Lake Shore & Michigan Southern Railway and others the commission ordered that the rate on iron ore from Lake Erie ports to Pittsburgh shall be no higher tham from Lake Erie ports to the Wheeling district.

Connellsville Coke Rates

According to attorneys representing the Connellsville coke producers and the Pittsburgh steel manufacturers, the decisions of the commission establish an important precedent in connection with the policy of the railroads in maintaining a so-called equalizing policy in the fixing of rates on raw and other materials. Wade H. Ellis, formerly assistant attorney general, was the chief attorney in the two cases mentioned, and he was assisted by Louis D. Brandeis, the Boston lawyer. When the decisions were handed down the office of Ellis & Donaldson gave out the following statement explanatory of them:

The decisions in the ore and coke cases are the culmination of bitterly fought contests. Ore and coke constitute a large proportion of the total tonnage of the big Eastern lines, and reductions in the rate on those commodities presented many serious problems. While the defenses to the rates were many and varied, in their final analysis they went chiefly to the amount of loss of revenue which would be entailed by a reduction in the rates.

One of the most important questions ever presented to the commission was decided in the ore case, i. e., the "equalization of assembling costs" theory. For years discriminatory rates on single commodities have been defended by the railroads upon the ground that such rates, when taken in connection with rates on other commodities, produced an equalization of assembling costs which was justified by consideration of practical expediency as well as public policy. The complaining ore shippers, however, contended that it was wholly beyond the functions of railroads to equalize assembling costs and deprive communities of the benefits of their natural advantages of location, and this contention the commission emphatically sustained.

The commission summarizes its findings in the Connellsville case as follows and orders the new rates to become effective on or before August 1:

Rates on coke in carloads from the Connellsville producing region of Pennsylvania to various destinations are attacked as unreasonable per se unjustly discriminatory, and unduly preferential; Held:

1. That the rates to Youngstown, Canton, Cleveland, and Toledo, Ohio; North Cornwall, Robesonia, Reading, and Philadelphia, Pa.; Baltimore, Md.; and Newark, N. J., are unreasonable

2. That the present relationship of rates as between the Connells-ville district and the Pairmont district in West Virginia is not unduly discriminatory against Connellsville or unduly preferential to Fairmont and must be maintained.

3. That participation by defendants in through rates from West Virginia and Tennessee fields, which yield lower earnings per ton-mile than their rates from the Connellsville field, is, under the conditions of competition between carriers which defendants can not control, neither unduly discriminatory nor unduly preferential.

These are the rates and shortest rail distances from the Connellsville district, some of which have not been made the subject of specific and formal complaint but undoubtedly will be in view of the commission's decisions:

	Rate		ate
Destination.	Distance,		Per ton-mile,
Buffalo, N. Y. Toledo, Ohio Detroit, Mich. Gary, Ind. South Chicago, Ill. Joliet, Ill. Bayview, Wis. Mayville, Wis. Cleveland, Ohio Youngstown, Ohio Columbus, Ohio	Miles. 326 314 379 510 525 550 624 677 201 134 260	1.85 1.95 2.10 2.50 2.50 2.70 2.75 1.65	Mills. 5.67 6.21 5.54 4.90 4.76 4.55 4.33 4.06 8.21 10.07 6.35
Canton, Ohio Pittsburgh, Pa. North Cornwall, Pa. Robesonia, Pa. Reading, Pa. Harrisburg, Pa. South Bethlehem, Pa. Philadelphia, Pa. Sparrows Point, Md. Phillipsburg, N. J. Newark, N. J.	170 69 285 297 308 255 367 360 287	1.45 .75 1.85 1.90 1.95 1.70 2.00 2.15 2.15 2.10 2.35	8.53 10.87 6.49 6.40 6.33 6.67 5.45 5.97 7.49 5.54 5.39

This is the formal order in the Connellsville case:

"It is ordered, that the above-named defendants he, and they are hereby, notified and required to cease and desist, on or before August 1, 1913, and for a period of two years thereafter to abstain from charging, demanding, collecting, or receiving their present interstate rates for the transportation of coke in carloads from the Connellsville producing region of Pennsylvania, as defined in said report of the commission, to the various destinations in Ohio, Pennsylvania, Maryland, and New Jersey named in paragraph 3 hereof, which rates are found in said report to be unreasonable.

"It is further ordered, that said defendants be and they are hereby, notified and required to establish, on or before August I, 1913, upon notice to the Interstate Commerce Commission and the general public by not less than five days' filing and posting in the manner prescribed in section 6 of the act to regulate commerce, and for a period of two years after said August I, 1913, to maintain and apply to the interstate transportation of coke in carloads from the said Connells-ville producing region of Pennsylvania to the following destinations rates which shall not exceed the following in dollars per net ton: Youngstown, Ohio, \$1.20; Canton, Ohio, \$1.40; Cleveland, Ohio, \$1.60; North Cornwall, Pa., Baltimore, Md., and Robesonia, Pa., \$1.80; Reading, Pa., and Toledo, Ohio, \$1.85; Philadelphia, Pa., \$2.05; and Newark, N. J., \$2.30, which rates are found in said report to be reasonable.

"It is further ordered, that said defendants be, and they are hereby notified and required to cease and desist, on or before August I, 1913, and for a period of two years thereafter, abstain, from charging, demanding, collecting, or receiving their present rates for the transportation of coke in carloads from the Fairmont district of West Virginia, as defined in said report of the Commission, to the various destinations in Ohio, Pennsylvania, Maryland, and New Jersey named in paragraph 3 hereof, which rates are found in said report to be unreasonable.

"And is is further ordered, that said defendants be, and they are hereby, notified and required to establish, on or before August I, 1913, and for a period of two years thereafter to maintain and apply to the transportation of coke in carloads from the said Fairmont district of West Virginia to the said destinations named in paragraph 3 hereof, the same relation of rates that at present exists between the said Fairmont district and the said Connellsville region with respect to said traf-

ic, which relation of rates is found in said report to be reasonable.

Pittsburgh Iron Ore Rates

In the case of the Pittsburgh Steel Company against the Lake Shore & Michigan Railway Company and others, the following order was entered, to become effective on

or before August 15:

It is ordered, that the above-named defendants be, and they are hereby, notified and required to cease and desist, on or before August 15, 1913, and for a period of two years thereafter to abstain, from charging, demanding, collecting, or receiving any higher rates for the transportation of iron ore in carloads from Ashtabula Harbor, Ohio, and other Lake Eric ports, to Monessen and Glassport, Pa., and other points in the Pittsburgh, Pa., rate district, than they contemporaneously maintain over their lines for the transportation of iron ore in carloads from said Lake Erie ports to points in the Wheeling, W. Va., rate district, as the present relation of rates is found in said report to be unjustly discriminatory.

"It is further ordered, that said defendants be, and they are hereby, notified and required to establish on or before August 15, 1913, upon statutory notice to the Interstate Commerce Commission and to the general public, by filing and posting in the manner prescribed in section 6 of the act to regulate commerce, and for a period of two years after August 15, 1913, to maintain and apply to the transportation of iron ore in carloads from said Lake Erie ports to points in said Pittsburgh district rates which shall not exceed the rates contemporaneously maintained over their lines for the transportation of iron ore in carloads from said Lake Eric ports to said points in the Wheeling district, as said relation of rates is found in said report to be nondiscrim-

inatory."

DISCRIMINATION AGAINST PITTSBURGH NOT JUSTIFIED

On the subject of equalization of rates, the commission said in this case as in the Connellsville case:

"It is apparent that the issue of unjust discrimination overshadows all others and it is the one we shall decide in this case.

"Eliminating the approximate terminal allowances and lock charges, the combined freight cost for the quantities of ore, coke, and limestone entering into I ton of pig iron is \$2,795 for Wheeling and \$2,885 for Pittsburgh. Youngstown district it is \$2.706. It is higher for Pittsburgh than for any other of the points involved in this case. These figures should be compared with those already referred to, given by the defendants, namely: Pittsburgh, \$2.75: Youngstown, \$2.74; and Wheeling, \$2.82. The figares presented by defendants would, therefore, show discrimination in favor of Pittsburgh, from the point of view of the equalization theory; while those same figures, when modified on the basis of terminal allowances and dock charges, show discrimination against Pittsburgh. But in either case the discrimination resulting from the failure of the equalization theory to equalize is trivial compared with the discrimination shown by the rates on ore alone. As shown above, these rates are 96c to Pittsburgh and 60c to Wheeling for substantially the same distance and under practically identical circumstances and conditions. only attempt made by defendant seriously to justify this difference of 60 per cent in the rate, as emphasized by counsel for complainants, is an appeal to the equalization theory, which we have condemned. We find nothing in this record to justify this discrimination.

"We do not wish to dispose of this case without referring to certain of its aspects which, in our judgment, are worthy of reflection. Various references were made in this case to the rates on coal and coke. Similarly, in other and related cases, comparisons of prices and rates on coal, coke, and iron ore have been made. Where so many localities, such varying distances, and almost infinite variations in qualities and prices are involved, it is extremely difficult to state definitely what the relative values of these different commodities are. However, taking a general survey of price statistics during the last 12 months, the statement may be ventured that, roughly, in the territory under consideration the value of coke at the oven and iron ore at the mine is the same, and that bitumthous coal at the mine is worth from one-half to one-

fourth of what coke and ore are worth.

The ultimate burden of the rate is very different in the

case of coke and ore from what it is in the case of coal, at least commercial coal. In the case of the latter, the consumer pays the freight charges quite directly, if not absolutely directly; in the case of ore and coke he pays the freight indirectly and usually only after many shift-ings of the charge from one group to another. The burden is diffused and distributed among the various participants in the progressive steps of manufacture and trade. From ore mine to nail, stove, kettle, tool, lathe, engine, and the multitude of other finished products, is a much longer route, with many tollgates, than from the coal mine to the kitchen range, the heater, and the furnace. Considerations of this character, together with a review of the effects on the revenues of these carriers which would result from anything like the reductions demanded by complainants in this case upon a substantial part of their total traffic, compel us to hesitate at this time and under prevailing conditions from going further than is necessitated by the removal of the most unjustifiable discrimination shown to exist in this case.

"After careful deliberation upon all the elements in this case, together with a consideration of the relation of this case to all the other cases in the group of which it is one, and which together affect the vital part of the total traffic of all of these carriers, we express it as our judgment and determination that the rate on iron ore from Lake Erie ports to the Pittsburgh district should not be higher than to the Wheeling district. It is for the carriers to determine to what extent they will reduce the Pittsburgh rate and o what extent they will raise the Wheeling rate. No conclusion is expressed with regard to the rates to Columbus, Zanesville, the southern Ohio district, or to other points, because roads involved in that traffic are not parties to this proceeding. An order in accordance with these findings will be issued."

The Other Coke Rate Decisions

In the case of the Youngstown Sheet & Tube Company and others against the Pittsburgh & Lake Erie Railroad Company this is a summary of the commission's findings, the order to become effective August 1:

'Complaint attacks the rate on coke from the Connellsville producing region in Pennsylvania to points in the Mahoning Valley of Ohio and the Shenango Valley of Pennsylvania as unreasonable per se. Reparation is

sought. Held:
"I. That, following the decision in Coke Producers'
Raltimore & Association of the Connellsville Region v. Baltimore & Ohio Railroad Company, 27 I. C. C., 125, the rate of \$1.35 per net ton from Connellsville district to points in the Mahoning Valley of Ohio is unreasonable to the extent

that it exceeds \$1.20 per net ton.

"2. Transportation from the Connellsville district to points in the Shenango Valley of Pennsylvania is intrastate,.

and not within this commission's jurisdiction,

"3. In the Connellsville Coke Producers' case, supra, a general readjustment of rates on coke is prescribed. Under such new adjustment reparation will not be awarded."

In the case of the Wisconsin Steel Company against the Pittsburgh & Lake Erie Railroad Company, the Inland Steel Company against the same, the commission held:

"After maintaining for a substantial period rates on coke from the Connellsville producing region in Pennsylvania to Chicago of \$2.35 per ton when for furnace use, and \$2.65 per ton when for foundry use, defendants, in conformity with ruling of the commission, abandoned the maintenance of rates dependent upon the use to which the commodity was put, and established a rate of \$2.50 per ton from Connellsville to Chicago. Complaints attack the rate of \$2.50 per ton as unreasonable, and pray for reparation; Held, That the rate of \$2.50 per ton is not unreasonable per se. Complaints dismissed.

"The rate per ton-mile on the \$2.50 rate is materially

less than the average revenue per ton-mile of all the carriers, and compares favorably with the per-ton-mile carnings under the rates established in the Coke Producers' As has been seen, the average loading of all coke to Chicago was 36.1 tons per car, which, at \$2.50 per ton, gives a per-car earning of \$90.25. The average loading of coal in certain trains, as shown by complainants, was 43.8 tons per car, which, at \$2.05 per ton, gives a per-car earning of \$89.79. As has been seen, the average loading of complainants' shipments of coke was heavier than that for all coke, due to the use of large capacity, specially constructed steel cars. This fact, however, would not entitle complainants to a lower rate than is accorded to others. The volume of movement has materially decreased, and although the iron business is again normal that fact affords no predicate that the production of by-product coke will not permanently lessen the movement."

In the case of the Wickwire Steel Company against the New York Central, in which case the complaint was also

dismissed, this was the finding:

"Present rates for the transportation of coke from the Connellsville and neighboring coking fields in Pennsylvania to the blast furnaces and steel mills in and about the city of Buffalo, N. Y., not found unreasonable. Complaint dismissed.

"The adjustment made by the carriers tends to lessen the discrimination against eastern Pennsylvania furnaces. Furthermore, the rate to Buffalo is one rate in a large rate structure which embraces the great industrial territory in the United States. We can not, in fairness to other localities, isolate this rate and ignore all others. It yields a revenue of 5.44 mills per ton per mile. This is somewhat higher per ton per mile than the rate to Chicago, for instance, but considerably lower per ton per mile than the rate to numerous other points. The rate of \$1.85 fits into the coke-rate map as reconstructed by us in a group of cases, of which this is one, and all of which must be considered together. We have given most careful consideration to all the aspects of the question before us, and we are constrained to hold that the rate under attack is not unreasonable. The complaint must be dismissed."

WILC

New Baush Radial Drilling Machine

A 6-Ft. Machine of Very Powerful Design, with Various Original Features

The Baush Machine Tool Company, Springfield, Mass., has brought out a new 6-ft, radial drilling machine designed to meet the demand from users for a rigid and powerful tool which will perform the heaviest kinds of

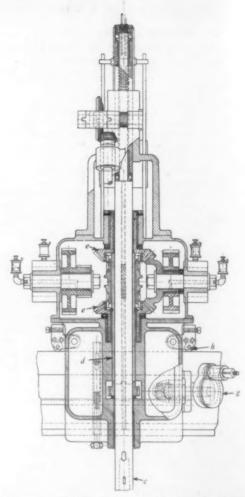


Fig. 2-Sectional E'evation of the Head of the Machine

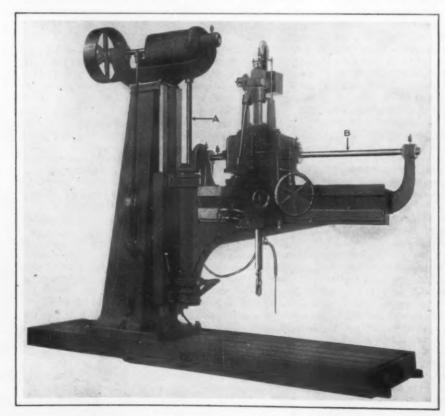


Fig. 1-The New Baush 6-Ft. Geared Radial Drilling Machine

work. The bed, arm and column, as well as the head mechanism, have exceptionally large proportions. The head is of the conventional type with a return groove for the lubricant and the tank and weir needed for its straining. The post is of rectangular box form and is tapered

to provide an ample space. The saddle carrying the arm trunnions is exceptionally long and rigid and is elevated by a screw. The large trunnions upon which the arm itself is mounted are provided with ball thrust bearings which take the weight, and with roller bearings that provide for easy operation.

The head gearing is all contained in an oil-tight case. The main drive is through the vertical shaft A, Fig. 1, down to the center of the trunnion, and a horizontal driving shaft, B, b, Fig. 3, which extends directly through the head to an outboard bearing on the arm. Both of these shafts have ball thrust bearings and in the case of the two horizontal shafts, that on the head of the machine and that extending the length of the arm, roller bearings are added. The feed of the head proper is accomplished by a worm and worm gear and a pinion engaging in a rack mounted on a quill on the upper end of the spindle. Ball bearings take the thrust of the quill in either direction. The spindle c, Figs. 2 and 3. extending down through the head, is driven by a long sleeve d, which in turn drives the feed

mechanism from the lower end.

The drive is through a pair of bevel gears, e, Fig. 2, which are arranged to be clutched to the spindle, providing a tapping attachment and at the same time a stop motion for the spindle when the clutch is in its inter-

mediate position. The method of keying the clutch spindle to the driving sleeve is original in that it is accomplished by three lines of balls f, Fig. 3, mounted in ball cases and traveling in hardened steel races, thus providing a clutch spline which moves practically without friction. It is possible, therefore, to start, stop or reverse the spindle with a minimum of effort on the part of the operator.

The back gearing is carried in two nests, one on each side of the spindle, within the oil-tight case, a construction which gives a balanced head. The back gear is thrown by a lever on the front of the machine and is arranged to lock in either the high or the low position. The bevel gears are furnished with ball thrusts and the bearings are bronze bushed. The gears themselves are alternately steel and bronze.

alternately steel and bronze.

The machine has six changes of feed, obtained through a sliding key, and also has a quick and slow hand feed, the former operated by a large handwheel directly on the feed shaft, and the slow feed by a small handwheel which is geared up to such an extent that back facing, counterboring or the sweeping off of a boss can The feed has both automatic and hand knockoff by a single lever, one motion of which stops the feed in any position. This is not only convenient and useful but also constitutes a safety feature for the reason that for counterboring, facing or back facing, where an accurate dimension or a flat surface is required, the fine feed can be used until the tool reaches practically the required dimension, at which point this feed can be instantly knocked off by the stop lever and a slight additional feed given by hand through the slow hand feed. In this way accurate work can be done with a minimum amount of hand labor. The automatic stop for the feed is arranged principally to throw out at the end of the spindle travel in order to protect the machine against breakage, but at the same time it has an adjustable stop so that the machine may be set to drill to a required depth.

The traverse of the head on the arm is accomplished by a handwheel and the spiral gearing g, Fig. 2, which operates in a rack in the usual manner, excepting that the wheel is geared up so that the motion is secured with small effort. The head is carried on a pair of friction rollers, h, which are set up by very powerful springs and thus maintain the weight. The binder for the head is arranged to clamp it against the bottom surface of the arm, that is, in the direction in which the work forces it. The spindle is accurately counterweighted and is driven by its largest diameter. Owing to the driving sleeve the action of the feed does not in any way tend to draw the

tapping clutch in or out of engagement.

The arm is raised and lowered by a screw and has a

Fig. 3-Plan View of the Head

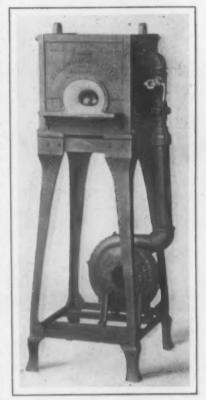
binder which locks it on the post. It is prevented from swinging by the conventional arm lock, the only difference being that it is operated from the saddle by a small pneumatic cylinder, which is so arranged that the weight does the locking. Therefore there is no waste of air

while the arm is locked, this power being used only for the swinging of the arm. The design has the additional advantage that should no air be available the lever of the lock can be operated temporarily by hand, or can be removed, and the usual binder arm substituted.

A Rivet Heating Furnace with Forced Draft

An improvement over the ordinary gas rivet heater has been made by the Improved Appliance Company, 455 Kent avenue, Brooklyn, N. Y. The air, instead of being supplied

without pressure through valves, is forced in by a small motor-driven blower, thus producing a more intense heat and. it is pointed out. utilizing the gas more efficiently. The distinguishing feature of this forge is that the rivets are entirely enveloped in a reducing atmosphere, the con-struction of the combustion chamber and tuyere giving the flame a whirling motion, while at the same time a short flame is permitted to exand out of the op opening. Sufficient flame, at the same time, it is pointed out, projects from the front opening to keep air from entering, and in this way the forge is deprived of any oxidizing action, and as a result,



An Improved Type of Rivet Heating Fur nace in Which the Air is Supplied by a Motor-Driven Blower Instead of Being Taken from a Compressed Air Line

the formation of scale on the rivets is avoided. The front flame does not interfere with the operator, as it emerges

flame does not interfere with the operator, as it emerges tangentially. The flame is thus directed to one side and the operator can, therefore, work as closely as he chooses to the front of the forge without experiencing any discomfort. As compared with a coal furnace, these rivet heating forges possess the advantage of eliminating scale, and the gas furnace is ready instantly in case a few extra rivets are required.

Any kind of gas can be used by the furnace, and the Westinghouse motor for driving the blower is operated from an electric light circuit. The air pressure supplied by the fan is 2 oz. If desired, the forge can be supplied without the motor-driven blower. This type of forge is intended for use where a supply of compressed air is available from a pipe line in the shop.

The forges without the blower are portable, within reasonable limits, and the forge head and stand can be moved separately,

as they are not attached. Lugs are provided, by means of which the heads can be carried about conveniently with iron pipe for handles, and if desired, the heads may be suspended on chains if they are to be used at a considerable hight without a stand.

The Helfenstein Large Electric Furnaces

Recent Developments in the Production of Ferrosilicon and Calcium Carbide and in the Smelting of Swedish Iron Ores

A well-illustrated article* by Dr. M. Oesterreich of Vienna describes the Helfenstein large electric furnaces, which are not at all well known to metallurgists in this country. The making of calcium carbide, which was a pioneer industry in the employment of the electric furnace, has led to the introduction of very large furnace units, particularly those designed by Dr. Alois Helfenstein. The experience gained here has also been made use of in the manufacture of ferrosilicon, and in later years methods have been developed for the electric refining of molten pig iron and steel, and for the direct smelting of iron ore. At first the Helfenstein furnaces were open, and even at that time showed many advantages compared with the small units then in use. Such open furnaces of 3000, 5000, 8000, 10,000 and 24,000 hp. are now in operation at Jajce, Matrei, Meran and Lechbruck in Bavaria; Visp, Gambel

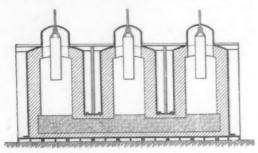


Fig. 1-Three-Phase Helfenstein Furnace

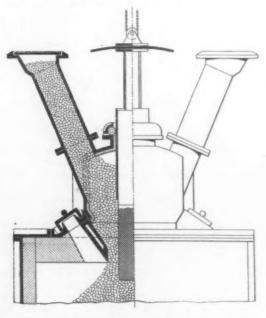


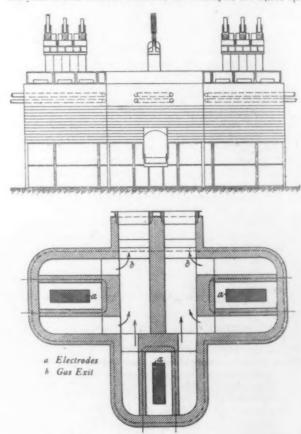
Fig. 4-Helfenstein Patent Charging Arrangement

and Thusis in Switzerland, and at Hafslund in Norway, the 24,000-hp. furnace being at the last mentioned place. Helfenstein has reached the highest loading for a separate hearth, namely, 2500 to 3000 kw. per compound electrode. 30,000 to 40,000 amperes at 75 to 90 volts. For a three-phase furnace this means a total load of 7500 to 9000 kw, or 9000 to 12,000 hp. Still further progress has been made in the production of calcium carbide because double three-phase furnaces have been built, where six instead of three built-up electrodes are arranged in the shaft of the furnace, and the capacity increased to 15,000-18,000 kw. Of course, this is not an increase in the real sense of the word, but it is interesting to see that by a simple joining up of three-phase units an unlimited increase in the capacity of such

furnaces can be brought about. The same idea is now being carried out by Helfenstein in large iron furnaces.

Closed Instead of Open Furnaces

It soon became necessary to build closed instead of open furnaces in order to secure better working conditions and bring about the most suitable and economic use of the valuable furnace gases. The closed furnace allows a still further increase in capacity, and also continuous mechanical charging. The introduction of the large units was so advantageous that the small ones could not meet the competition. The main reason is that the cost of the plant is greatly reduced, a simple large furnace taking the place of many small ones, for example at Jajce, where 36 small furnaces have been replaced by the single large one. No reserve is necessary with the large units because the single hearth can be made so large that the hot zone is always far enough removed from the walls, and the latter are protected from the highest temperatures by the comparatively cold charge. As a matter of fact the furnaces work the year round without reserve; for example, the 24,000-hp.



Figs. 2 and 3-Triangular Arrangement of Shafts

furnace at Hafslund, which has been running continuously since 1907. These furnaces have a so-called open breast which is formed by a crust of frozen material like calcium carbide. The tap hole is opened with an electric arc. The operating costs are also lower with the large furnaces because the smaller amount of labor and simplification of the current conduction allow marked savings. The product is also much purer with a large furnace because of automatic refining. This is particularly important as it allows the production of materials that would either be very difficult or impossible to make in the small furnaces.

Construction of the Furnace

The closing of small furnace units offered no special difficulty, but as it was not desired to relinquish the advan-

^{*}Stahl und Eisen, February 20, 1913.

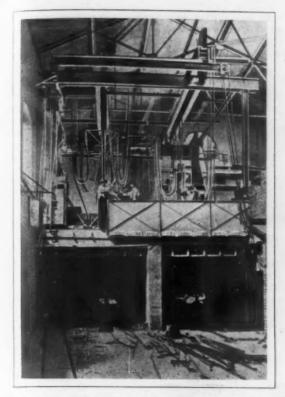
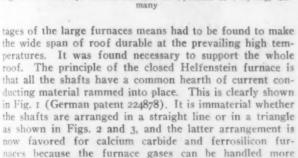


Fig. 5—A 6000-Hp. Closed Furnace as Operated at Freyring, Germany



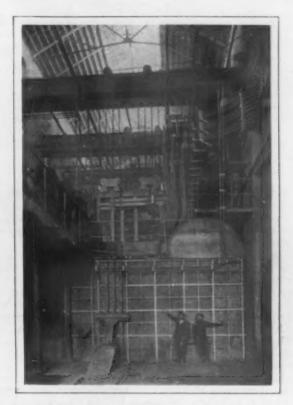


Fig. 6-A 10,000-Hp. Closed Furnace as Operated in France

easily, while with the iron furnaces the shafts remain in a straight line. In the latter the lower part of the division walls is also dispensed with.

The charging arrangement of the Helfenstein furnace is shown in Fig. 4 (German patent 226956). A capacious hopper is placed above the furnace through which the electrodes penetrate. The tight connection between the electrodes and the hopper is made by means of a flexible casing, to the upper end of which the movable current cables are fastened. Wide slits are provided in the furnace roof at the side of and around the hopper openings through

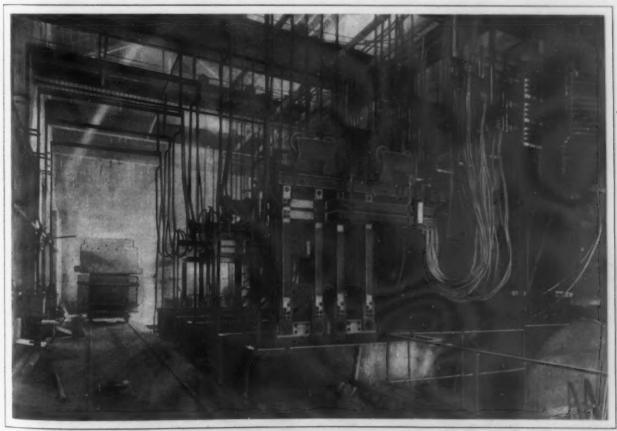


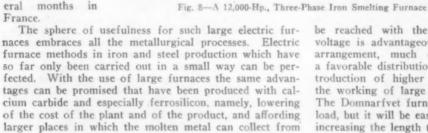
Fig. 7-Upper View of Furnace in Fig. 6, Showing Method of Suspending Electrodes

which the movement of the charge can be regulated and furnace troubles recognized and corrected. They are fitted with gas-tight covers. Other illustrations are given in the original article showing a patented roof arrangement. Two water-cooled ledge-like beams or simply two water-cooled pipes are placed across the whole length of the furnace at the lower openings of the hopper. They are supported by the furnace walls and serve in their turn to support the flat or arched roof. Dr. Helfenstein has also taken out various patents on an electric refining arrangement in immediate connection with a blast furnace or cupola, which consists of special electrically heated forehearths.

Advantages of Large Over Small Units

The advantage of the large open furnaces compared with the small furnaces was very great and the closing of the furnaces increased the advantage. As a proof of this a comparison is given of the costs of carbide and ferrosilicon made in small, large open, and large closed furnaces. With the small furnace the cost for carbide is 15 to 17 marks, with the large open furnace 12.75 to 13.60 marks and with the large closed furnace 10.20 to 10.75 Ferrosilicon cannot be economically produced in the small furnaces, and with the large closed furnace the cost is about 17 marks, lower than with an open furnace. The unit is not given but is probably the metric ton. In

Fig. 5 is shown a 6000-hp. closed furnace which has been in operation for three years at Freyring, Germany, making calcium carbide or ferrosilicon as required. Another large furnace, of h p., 10,000 is shown in Fig. 6, which has been in operation for several months in France.



which a product of greater uniformity can be obtained. For countries with abundant water power producing cheap electricity the direct smelting of iron ores in electric furnaces comes into consideration. It is soon found out that here also economical work can only be done with large electric furnaces. The pioneer work in the electric smelting of iron ores has been carried out, without question, at the Domnarfvet plant in Sweden, where, as is well known, furnaces have been designed and built by Grönwall, Lindblad and Stalhane, and gradually increased to a size of 2000 hp. The Grönwall furnace, notwithstanding the many good points that make it appear suitable for small units, has several disadvantages that would stand out clearly with an increase above 2000 hp. They are the high shaft which makes stopping and starting very difficult. and further the inclined position of the electrodes, which does not allow the easy regulation possible in the large Helfenstein furnaces. Other disadvantages are the short life of the inclined roof, which is weakened by the electrode openings and which requires a thorough repairing several times a year, causing a complete shut down each There is also the danger of explosions which is considerably greater than with the ordinary blast furnace because of the high shaft and the heating taking place in only the lowest part of the furnace. For these reasons the use of coke alone as the reducing agent is very limited with the Grönwall furnace, and the smelting of finely divided magnetic concentrates is generally given up as in-Also the circulation of the gases, which is principally done to cool the roof and does not have the

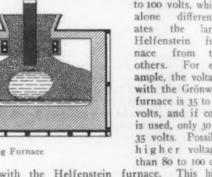
importance for pre-reduction claimed at first, is difficult to carry out and causes frequent operating troubles. It would seem better to dispense with it altogether if the roof would not thereby suffer still greater and worse attack

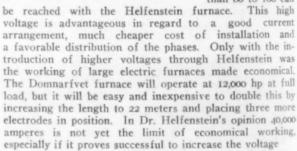
The 12,000-Hp Furnace

These disadvantages are recognized at Domnarivet and large 12,000 hp Helfenstein furnace has been built n shape it is like a large open-hearth furnace. In shape Through the three shafts, arranged as shown in Fig. 8, the electrodes penetrate from above and in operation are completely surrounded by the charge. They hang in the middle axis above the hearth, move freely, and are easily regulated. Hoppers are arranged above the shafts from which the charge will continuously enter the furnace. following details have been furnished by the Helfenstein Electric Furnace Company, Vienna:

The length is about 11 meters, width 4 meters, and hight to the charging floor 5 meters. The charging bins above this level are about 6 meters high, so that the total hight is 11 meters. Each built-up electrode weighs about 3 tons, and the weight to be moved for each phase (cables, electrode, etc.) is about 10 tons. Regulation is effected by motor drive and one man can attend to the three electrodes. Regarding electrical conditions, each electrode leads in one phase, which with full load amounts to 30,000

to 40,000 amperes. The tension for each hearth is 80 to 100 volts, which alone differentithe ates large Helfenstein from For example, the voltage with the Grönwall furnace is 35 to 50 volts, and if coke is used, only 30 to 35 volts. Possibly higher voltages than 80 to 100 can





Hartford Manufacturers Meet.-The Manufacturers Association of Hartford County held its annual meeting at the Hartford Club, Hartford, Conn., Thursday evening. June 12. The guests of honor were Col. George Pope. Hartford, the new president of the National Association of Manufacturers; J. P. Bird, its general manager, and Judge A. Parker Nevins, its attorney. Officers were elected as follows: President, Philip B. Gale, Hartford Machine Screw Company; first vice-president, Clarence E. Whitney, Whitney Mfg. Company; second vice-president. Charles B. Whittelsey, Hartford Rubber Works; treasurer, Charles L. Taylor, Taylor & Fenn Company. Board of managers, these officers and R. H. Schutz, Smyth Mfg. Company; C. D. Rice, Underwood Typewriter Company; F. C. Billings, Billings & Spencer Company; George Pope. Pope Mfg. Company; R. S. Brown, New Britain Machine Company, New Britain; E. J. Manning, F. W. Stickle. Capitol Foundry Company, and D. M. Wright, Henry & Weight, Mfg. Company, and D. M. Wright, Henry & Wright Mfg. Company.

It is reported that extensive iron ore deposits have been discovered in the north of Norway near the Oksfjord, one of the first of the Lofoten Islands next to the continent. They are favorably located for transportation.

Book Reviews

Iron Mining in Minnesota. By Charles E. van Barne-veld. Pages 215, 63 x 91/4 in. Cloth. Published by the University of Minnesota.

This volume is sent out by the Minnesota School of Mines as Bulletin No. 1, and is intended to meet demands of both a technical and popular nature. It is based on information secured by field work commenced by the author in 1910, and founded on personal examinations of the Minnesota iron ranges. There is a brief historical introduction, followed by a section on the geology of the iron ranges. The remainder of the book is devoted to a discussion of mining methods and problems, with a large number of maps, plates and photographs, giving valuable data and statistics.

Engineer's Handbook on Patents. By William Maconiber. Pages, 288, 45% x 7 in. Flexible leather. Published by Little, Brown & Co., Boston, 1913. Price, \$2.50.

The inventor of the early days was not a scientific man and his products were largely the results of chance and cleverness. The inventions of the present and the future must be made by trained graduates of engineering schools. This work is not a treatise, nor a textbook, but a handbook. The author is a member of the Buffalo bar and lecturer on the law of patents in Cornell University. object of the book is to present the theories which underlie successful inventions, both as to the law and the theory of patents; to enable the user to avoid lines of thought which have resulted in failures and to inform him on what is patentable, the nature of invention, the obtaining of patents, infringement, etc. Quotations and citations of the decisions of courts of last resort are numerous.

By J. F. Springer, h. Published by the Oxy-Acetylene Torch Practice. Pages, 140, 51/4 x 71/2 in. Cloth. Publisl Richardson Press, New York. Price, \$2.50.

This book is prepared by the author with the co-operation of the Davis-Bournonville Company, New York. The object is to give an account of the latest approved practice in oxy-acetylene welding and cutting. There are chapters on ordinary welding, pre-heating, sheet-metal welding, machine welding, etc., with an interesting discussion of the question, "Does cutting injure the metal?" It should be a valuable guide to the practitioner in this new art.

By William N. h. Published by The Science of Burning Liquid Fuel. Best. Pages, 159, 61/4 x 91/4 in. Cloth. the author. Price, \$2.

Anything from the author on this subject commands attention. Mr. Best is widely known in his chosen field and he has made a science of a subject to which he has devoted the greater part of his life. After an interesting introduction, the author discusses in order liquid fuel, atomization, oil systems, refractory material, locomotive equipment, stationary and marine boilers, ovens, and turnaces. Each subject is treated comprehensively and with a view to bringing out the need of scientific methods of burning fuels to insure economical results. It is a practical book for practical men. There are numerous illus-

Probenahme und Analyse von Eisen und Stahl (Selection of Tests and the Analysis of Iron and Steel). By Bauer and E. Deiss. Pages viii + 258, 71/4 x 10 in. Published by Julius Springer, Berlin.

This book consists of two parts-a discussion of the best methods of selecting portions of steel and iron both for analysis and for microscopic work, and a presentation of the various methods of chemical analysis. The results of errors in the selection of tests are shown in the former. The standard chemical methods are discussed, including those for titanium and vanadium. The work is well illustrated but is not superior to many similar ones in English and contains nothing really new.

The Bureau of Standards, Washington, D. C., has issued the following: Volume 8 of the Bulletin, embracings Nos. 1, 2, 3 and 4, and volume 9, No. 1, covering a wide variety of important subjects: also Technological Paper No. 12 on the "Action of the Salts in Alkali Water and Sea Water on Cements" and Technological Paper No. 13 on the "Evaporation Test for Mineral Lubricating and Transformer Oils."

A New Line of Motor-Driven Grinding Machines

Forbes & Myers, Worcester, Mass., have brought out the initial types of a new line of motor-driven grinding machines. The drive is from the simplest form of induc-

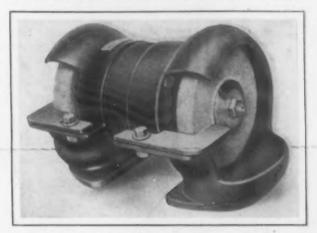


Fig. 1—A New Type of Tool Grinding Machine Designed for Medium and Heavy Work

tion motor. There are no brushes or moving contacts, no soldered or bolted joints, no paper or fabric insulation. The only moving part is the shaft, which runs in ball The electrical parts and bearings are inclosed in dustproof covers. Two of the machines are illustrated in Figs. 1 and 2, being views of the inclosed tool grinding machine and the open type of general purpose machine respectively. The rotor of the induction motor used for driving both machines is shown in Fig. 3.

The machines are designed for use in machine shops,

foundries, blacksmith shops and other establishments

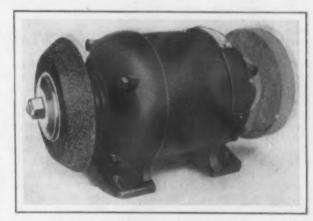


Fig. 2-The Open Type of Machine

where the need exists for medium and heavy grinding. The tool grinding machine, Fig. 1, has heavy wheel guards which are solid with the motor casing. It is to be to a bench, where it occupies little space, the total length being 12 in. The open grinding machine, shown in Fig. 2, may be fastened either to a bench or to the wall or column.

Both machines are built in two types, for heavy or medium work. All carry 6-in. wheels, driven by motors of

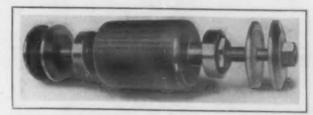


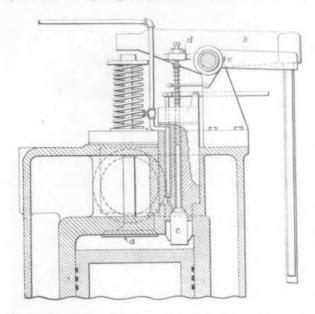
Fig. 3-The Rotating Part of the Machines

from 110 to 550 volts, 60 cycles, two and three phase. A line of 12-in. machines is in process of development.

A milling cutter grinding attachment can be furnished for the tool grinding machine.

A Horizontal Crude Oil Engine

A horizontal engine of the compression type using crude oil as fuel has been brought out by the St. Marys Machine Company, St. Marys, Ohio. While this engine operates on the compression principle, it does not, it is stated, make use of as high a compression pressure as the Diesel engine. The charge of air is drawn into the cylinder through the main inlet valve on the suction stroke and through another valve a small charge of fuel and air is drawn into a small cylinder directly adjacent to the combustion chamber of the working cylinder. The fuel and air are confined in this small cylinder until ignition takes place, and for igniting the mixture a small charge of very



Sectional Elevation of a Portion of the Cylinder Showing the Arrangement of the Various Parts in the New St. Mary's Oil Engine

hot air is drawn from the main combustion space of the engine and admitted to the small cylinder in which the fuel and air are confined. It is pointed out that this small charge of hot air will cause an explosion in the small cylinder, since the light hydro-carbons in the fuel have become vaporized during the suction stroke and a portion of the compression stroke of the piston and are mixed with the small quantity of air confined in this cylinder, thus forming an explosive mixture. As soon as the primary explosion takes place in the small cylinder, the pressure there is increased above that of the compressed air in the combustion chamber of the engine. This mixture then passes into the main engine cylinder, taking with it the remaining oil from the small cylinder, which is blown out in an atomized condition. It is pointed out that this state of affairs can be timed absolutely and adjusted for any kind of fuel, thus corresponding to the advancing and retarding of the spark on a common igniter.

In the operation of the engine, it is assumed that the piston is just beginning the suction stroke, as shown in the accompanying drawing. The intake valve a is opened by the rocker arm b, and at the proper point in the stroke, the valve c is opened by the lug d. In this position a small spray port, leading from the primary to the working cylinder, is uncovered below the projecting timing lug e. reduced pressure in the cylinder causes air to be drawn into the primary cylinder, and at the same time oil is also sucked into this cylinder. It is at this point that the process of distillation takes place and the light hydrocarbons are separated from the heavy portion of the oil. The exact quantity of oil required for each stroke is regulated by the governor. When the compression stroke begins the valve c closes and all communication with the air and oil supply is cut off and the spray port is also covered, thus cutting off the communication between the primary and the main cylinders. A sufficient amount of compression is permitted to pass the valve and raise the pressure in the primary cylinder until ignition takes place. The ignition occurs early in the stroke, as the pressure necessary to ignite the light hydro-carbons is much less than the compression pressure used. It is pointed out that this primary explosion raises the pressure in the primary cylinder and most of it is retained until it is released by a rotary movement of the valve c, uncovering the spray port leading from the primary to the working cylinder, which permits the pressure in the primary cylinder to force the oil out through the port into the main combustion cylinder, where the final combustion takes place. In this way it is pointed out that high pressure pumps and high compression air compressors for the engine are not required and electrical appliances for producing ignition are, of course, not used.

Combination Boring and Drilling Machine

A machine has been invented and patented by C. C. Wais, Cincinnati, Ohio, which contains a number of points that are of interest to mechanics. The machine is really a combination boring and radial drilling machine, and consists essentially of a base plate with a round table mechanism for driving it. The driving mechanism consists of the customary cone pulley and back gears, and is arranged so that by throwing a square tooth clutch, the drive can be transferred from the drilling head to the table, or vice versa. Fig. 1 is a side elevation of the device employed to feed the drill head and move the work support, while a vertical section of the table driving mechanism is reproduced in Fig. 2.

The drive of the drill head, as will be noticed from Fig. 1, is similar to that ordinarily employed in driving the heads of radial drilling machines. The feed mechanism on the drill head consists of a nest of gears with the usual drive feed construction. Eight rates of feed ranging from 0.022 to 0.063 in. per revolution of the spindle are available, and in addition there is a secondary gear train that can be connected through a clutch lever to give posi-The thread tive leads for chasing threads and tapping. range provided is from 4 to 46 threads per in., four intermediate sets of 8, 111/2, 16 and 32 threads being also provided. The feed mechanism of the head is arranged so that it will feed either up or down, and it will be noticed that the feeds are slow enough to enable the machine to operate on vertical milling work. A set of tumbler gears, similar to those on the ordinary radial drilling machine, are employed for raising or lowering the arm on the housing.

The table driving mechanism, a vertical section of which is reproduced in Fig. 2, contains several interesting features. It can be driven through bevel gears and pinions, which is the usual construction for driving the tables of boring mills, and in addition there is a worm gear mounted on the lower end of the table mandrel that is used for revolving the table slowly when circular milling work is being handled. A feed box of the tumbler gear type, which is located at the bottom of the column, gives a series of

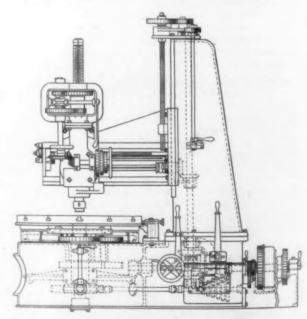


Fig. 1—A Side Elevation of the Device Employed to Feed the Drill Head and Move the Work Support to Give Odd Shapes of Holes, Etc., Partly Broken Away

feeds suitable for this class of work and is entirely independent of any other feed mechanism on the machine.

The round table consists of two pieces, the table proper being mounted on an auxiliary table with angular slides reaching through and projecting below the auxiliary table. When the table is being driven through the regular bevel gear and pinion mechanism, these two tables are fastened

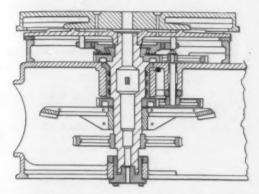


Fig. 2-A Vertical Section of the Table Driving Mechanism

by dowel pins, making a drive which is practically the same as for a regular boring mill table. If the dowel pins are removed and an auxiliary set of gears between the bevel gear and the table mandre! engaged, a drive is established through an eccentric slide which oscillates the top table in addition to the regular rotary movement. In this way it is possible to bore elliptical holes and many other curious forms. The variations in the oscillations are effected by the ratio of the gearing in the auxiliary drive. This latter feature of the machine makes it particularly suited for boring portholes and also for boiler manholes and other work of a similar character, in addition to being generally adapted for a wide variety of milling, drilling and boring operations.

A Hard Service Test of National Well Casing

An interesting example of the resistance to compression of steel well casing is shown in the accompanying engraving. This is a view of a section of 5-3/16-in. steel well casing made by the National Tube Company, Pittsburgh, Pa., which was compressed from its normal length of from 18 to 20 ft. to about 8 ft. without producing any fracture in the material.

The joint in question was part of a liner which was placed in a well near Gore, Ohio, after it had been completed and shot. It was decided to give the well a second shot, and 150 qt. of nitroglycerine with a 20-qt. anchor shot was placed in the well. The liner was then removed, and after it was brought to the surface, it was discovered that one joint of the casing was still in the hole. The shot was exploded in the hope that the joint of the liner would come out following the shot, but it lodged about 1500 ft. from the top, which was about half way down the well. After working with the section of the casing for

The Long Self-Dumping Wheelbarrow

A self-dumping wheelbarrow, which discharges its contents ahead of the wheel, is being placed on the market by Miller & Coulson, Diamond Bank Building, Pittsburgh, Pa. To discharge the contents of the barrow a steady downward pressure on the handles suffices. This brings the tray forward and the contents are dumped about 8 in. in front of the wheel. It is pointed out that this results in thorough dumping of the tray, absolute control of the supply and requires only about 40 per cent. of the power otherwise required to dump. The frame of the barrow is made of heavy steel tubing reinforced with 1½-in. strap iron braces, and the hopper or tray is No. 14 gauge steel,



A New Type of Self-Dumping Wheelbarrow Which is Tilted by a Downward Pressure on the Handles Into the Dumping Position

which is pressed into shape and reinforced on the edges and lip with a rod over which the steel plate is turned. The wheel, which is of steel, has a heavy tire and strong spokes, and the hub is of the self-oiling type.

Two Very Large Manganese Steel Castings

About two years ago the Edgar Allen American Manganese Steel Company, McCormick Building, Chicago, Ill., furnished the Bethlehem Steel Company two reversing blooming mill pinions weighing 14,500 lb. each. At that time, these were the largest manganese castings ever made, and lately this record has been broken. Two pinions, 52 in, in diameter and weighing 23,600 lb. each, have been furnished to the Bethlehem Company, these castings, it is claimed, being the largest ones ever produced from manganese steel. A considerable saving in the weight results from the use of this material for the castings, as ordinary steel pinions of the same size would weigh about 10,000 lb. more. The service required of these pinions is probably the hardest there is in steel plants, as they are used to roll ingots into heavy I-beam sections. The ingots are reduced as much as 2 in. in one pass through the rolls, and as soon as they go through once, they are passed back



A Joint of 5 3/16-In. National Steel Well Casing Which Was Compressed to Less than Half Its Length

a few days, a bell socket was put over it, and it was pulled out in the condition shown. It is pointed out that while the punishment and distortion of the casing are unusual and severe, at the same time, they nevertheless demonstrate the high quality of the material entering into the construction of the National steel well casing. In addition to the 5 3/16-in. casing, some 65%-in. casing was also used, which was not damaged in any way.

again, which means that the momentum of many tons of gears, couplings, spindles and rolls is stopped with a jerk and reversed. The ingots also sometimes stick in the rolls and remain stationary until the engine gathers sufficient power to force them through. It is stated that the original pinions have already rolled twice as many tons of steel as was necessary to pay for them and have scarcely begun to show any wear.

Germany's Serious Financial Situation

Numerous references to Germany's need of money have been appearing in press dispatches from Europe in recent months, but the gloomiest picture of present conditions so far presented is given in a Berlin cablegram dated June 13, printed in the New York Commercial June 14, extracts from which are given below:

Real Estate Troubles

Mortgages which hitherto were regarded as gilt-edged are becoming daily more unplaceable. Money is difficult to get for first mortgages even at an appraisement of 40 per cent. of the value, while money for second mortgages simply cannot be obtained.

Locally, it is only the concerted action of the banks that is preventing a disastrous collapse in the real estate and building markets, for which money is practically unobtainable, owing to the very unhealthy kind of building speculation.

Although there are 600,000 people in Berlin and families of five and seven persons are living in flats of one room and a kitchen, there are over 80,000 vacant flats in the city. Many new blocks of flats are under foreclosure before they are finished and others are still unfinished because the builders are unable to get any more money. The Merchant Elders' recent report characterized the situation as hopeless.

Government Loans Go Begging

While much fuss has been made and American stocks bitterly assailed because of the appointment of a receiver for the St. Louis & San Francisco Railroad, the fact that the Chinese loan of \$300,000,000 was oversubscribed six times, while the Prussian and imperial loans are going begging proves that the Germans have no more faith in their own paper than in American securities.

The banks do not dispute the fact that the new military tax of \$262,000,000 has already driven and will continue to drive money out of Germany to some place where it cannot be taxed. Men of large business declare that the taxes, the compulsory insurance of employees and the income tax altogether aggregate a burden exceeding 15 per cent. of their incomes.

Germany's losses from the depreciation of securities since the beginning of the Turkish war have been enormous. The worst of the situation is that the depreciation continues all along the line, not only in foreign but in domestic stocks and even good dividend payers.

The demands on the Imperial Bank have shown an astounding increase over 1912. The loans on notes and collaterals for May were \$47,000,000 more than for the same month last year and \$42,000,000 more than for May, 1907. Private discounts on the Hamburg Boerse are nearly 2 per cent. above the figures of May, 1912, and 2.8 per cent. above those of 1911. German traders hoped until recently that the Bank of England would reduce its rate. That hope is now gone and the situation must be faced as it exists.

There is a growing fear of a greater industrial crisis owing to the long credit upon which business is largely done and the inability to make collections.

Some of the Unfavorable Factors in the Situation

Nobody appears to comprehend clearly all the factors which unite to make the situation so unfavorable, but there can be no doubt in regard to some of them. In the first place, the Germans are still paying the penalty of Foreign Secretary von Kiderlen-Waechter's Morocco expedition of 1911. French and other foreign loans in Germany which were called in at that time made serious demands on German financiers. The effects of this withdrawal are still felt. In the second place, Germany is facing war expenditures of \$250,000,000, and added to the burden which this will place on the taxpayers is the uncertainty as to the method of taxation. No one as yet knows what Morevoer, the withdrawal of a further his share will be. 140,000 able-bodied men from paying employment will mean a further industrial loss. Then came the unexpected new emission of imperial and Prussian securities, and it was seen that even Prussia was obliged to discount oneyear treasury bills at 51/2 per cent. Under such circumstances traders naturally asked where is the limit?

As is always the case in a time of financial market stringency it is not only the big men who suffer. Statis-

tics of the municipal savings banks of Berlin show a decrease in deposits of \$1,500,000 last year and a decrease of 25,371 in the number of individual depositors. Somewhat startling is the statement that the banks' reserve funds have sunk from \$4,750,000 to \$2,250,000 through the fall in security prices. This is a fall of more than 42 per cent.

Advertising Men's Creed

The work of the ninth annual convention of the Associated Advertising Clubs at Baltimore, Md., which ended Friday, June 13, is summed up in the following declaration of principles:

We believe in truth, the cornerstone of all honorable and successful business, and we pledge ourselves each to one and one to all to make this the foundation of our dealings to the end that our mutual relations may become still more harmonious and efficient. We believe in truth not only in the printed word, but in every phase of business connected with the creation, publication and dissemination of advertising.

We believe there should be no double standard of morality involving buyer and seller of advertising or advertising material. Governmental agencies insist on "full weight" packages and "full weight" circulation figures. They also should insist on "full weight" delivery in every commercial transaction involved in advertising. We believe that agents and advertisers should not issue copy containing manifestly exaggerated statements, slurs, or offensive matter of any kind, and that no such statements should be given publicity.

We believe that the present chaotic multiplicity of methods of arriving at verification of circulation statements are not only confusing but inadequate, and that the time for radical revision of these methods and for standardization of statements is the present, and the opportunity for constructive work along these lines is given by the assemblage at this convention for the first time of representatives of all the different interests concerned in this vital matter.

We believe in co-operation with other agencies now at work on this problem, especially in the plan of the central bureau of verification, which has already been initiated by some of the organizations represented in the convention, and request the executive committee to proceed therewith.

We indorse the work of the National Vigilance Committee, and believe in the continued and persistent education of the press and public regarding fraudulent advertising, and recommend that the commission, with the co-operation of the National Vigilance Committee should pass upon problems raised and conduct campaigns of education on these lines. We believe it to be the duty of every advertising interest to submit problems regarding questionable advertising to this commission and to the National Vigilance Committee

We believe that the elimination of sharp practice on the part of both buyer and seller of advertising and advertising material will result from the closer relationship that is being established, and that in place of minor antagonisms will come personal co-operation to the increased benefit of all concerned and the uplifting of the great and growing business of advertising.

growing business of advertising.

We believe in upholding the hands worthy to be upheld, and we believe that each and every member owes a duty to this association of enforcing the code of morals based on truth in advertising and truth and integrity in all the functions pertaining thereto.

The convention adjourned to meet at Toronto next year. William Woodhead, San Francisco, was elected president; Walter B. Cherry, Syracuse, N. Y., vice-president; P. S. Florea, Indianapolis, secretary (re-election), and T. D. La Quatte, Des Moines, Iowa, treasurer.

Steel made in the electric furnace in France in 1908 amounted to 2289 tons crude and 1235 tons finished. By 1911 it had risen to 13,850 tons crude and 8898 tons finished steel. In Germany the production of electric steel has been as follows: 1908, 19,500 tons; 1909, 17,700 tons; 1910, 26,200 tons; 1911, 60,600 tons, and 1912, 74,200 tons.

Robert Francy, Toronto, Ohio, has purchased the plant of the Davis-Price Foundry & Machine Company, New Cumberland, Ohio, which recently went into bankruptcy. Mr. Francy will be president and general manager of a new company that will operate the plant.

The Bancroft & Martin Rolling Mills Company, whose works are located at Portland, Me., announces that P. C. Rogers has been taken into the firm and appointed sales manager, with offices at 12 Pearl street, Boston, Mass.

Two-Pass, 'Two-Drum Boilers

The Heine Safety Boiler Company, St. Louis, Mo., is building its larger sizes of boilers with two drums and suitable water legs, the tube surface being arranged in two horizontal passes which is somewhat different from the standard construction for the smaller sizes. In these boilers there is a horizontal baffle on the lowest row of tubes, which extends over the furnace and back over the bridge wall, to form the roof of the combustion chamber. The middle baffle, which in the case of the boilers installed at the service plant of the Grand Central Terminal, New York City, is located on the ninth row of tubes, consists of a special cast-iron baffle extending from the rear leg toward the front one, with a sufficient opening for the passage of the gases. On the top row of tubes are placed T-tiles, similar to those on the bottom, extending from the front water leg within a few feet of the rear leg. arrangement, it is emphasized, gives a long, effective path of travel, and the boiler surface is compactly arranged, so that there is efficient absorption of the heat in the gases, even with the comparatively high furnace temperatures resulting from the design of the combustion chamber.

Another interesting point about these boilers is the superheater design. Two units which are located above the water line in a firebrick chamber formed on each side of the setting are used for each boiler. Each chamber is connected with the furnace by a flue, and a small percentage of the furnace gases passes up these flues and supplies heat to the superheater tubes. Two passes are made by the gases over the tubes, and they then pass out of the superheater chamber at the end nearest the front header. Before reaching the uptake, they pass under the boiler drums. Complete control of the amount of gases flowing over the tubes is given by a damper in the superheater outlet which permits temperature regulation and the entire cutting off of the supply of hot gases when saturated steam is desired or there is no boiler load. No provision is made for flooding the superheater, as that operation, it is emphasized, is unnecessary, and this feature does away with the forming of the deposits of scale within the superheater tubes. Tests made on the 635-hp. units installed at the service plant of the Grand Central Terminal, with anthracite No. 2 buckwheat coal and natural draft, gave efficiencies in excess of 70 per cent.

A Growing Southern Machinery Enterprise

The American Machine & Mfg. Company, with plants at Greenville, S. C., and Charlotte, N. C., is arranging to concentrate its manufacturing business at Greenville, discontinuing operations at Charlotte. Some years ago this company succeeded the D. A. Tompkins Company at Charlotte, and about two years ago bought out the G. H. Bushnell Press Company, Thompsonville, Conn., taking over its entire line of oil mill machinery. Since then the American Company has been building some oil mill and cotton mill machinery at Charlotte but specializing in the oil mill line at Greenville. The Tompkins and Bushnell lines have been expanded largely, a number of new machines of the company's own design having been brought out. The engineering department is composed of practical oil mill operators as well as expert machine designers. The company designs and equips oil mills, furnishing everything that goes into a modern plant, also making a specialty of redesigning old plants.

The wage committee of the United Sons of Vulcan has presented a wage scale to the Youngstown Sheet & Tube Company, Youngstown, Ohio, calling for \$7 a ton flat for puddling for the scale year commencing July I, an increase of \$1 a ton over the scale expiring June 30. A conference will be held at an early date, but it is believed the advance will be refused.

The plant for crushing slag, construction on which has been under way for some time by the Carnegie Steel Company between Girard and Niles, Ohio, has been completed. It will crush and screen slag to be used for road making purposes.

April Iron and Steel Exports and Imports

The April report of the Bureau of Foreign and Domestic Commerce shows that our iron and steel exports and imports just about held their own as compared with the unusually large March figures. The total value of the exports of iron and steel and manufactures thereof, not including iron ore, in April was \$27,123,044, against \$27,201,197 in March. The value of similar imports in April was \$2,849,819, against \$3,020,482 in March.

The exports of commodities for which quantities are given totaled 260,438 gross tons in April, against 257,321 tons in March. Among the noteworthy changes in the exports is the decline in billets, ingots and blooms from 24,101 tons in April, 1912, and 16,650 tons in March, 1913, to 7441 tons in April, 1913. Wire nail exports, which had doubled in March as compared with March a year previous, were back to 2622 tons in April. Steel rails increased from 25,371 tons in March to 41,112 tons in April, and structural iron and steel from 19,853 tons in March, 1912, and 32,065 tons in March, 1913, to 45,556 tons for April of this year. Details of the exports of such commodities for April and 10 months of the current fiscal year ended with April, compared with the corresponding periods of the previous fiscal year, are as follows:

Exports	of Iron a	nd Steel		
	- Ar	ril —	-Ten m	onths-
Commodities	1913 Gross tons	1912 Gross tons	1913 Gross tons	1912 Gross tons
Pig iron Scrap Bar iron Wire roda Steel bars Billets, ingots and blooms,	21,691 8,257 1,387 7,624 16,678	29,872 7,448 1,374 6,899 17,038	244,711 89,971 21,139 35,962 196,641	130.677 64,555 11,739 60,625 115,402
Bolts and nuts Hoops and bands	7,441 1,902 2,171	24,101 638	214,045 17,082 15,981	174,511 6,203
*Horse shoes	56 469 901 2,622	721	939 4.482 10,625 46,968	8,692 52,424
All other nails, including tacks Pipes and pipe fittings Radiators and cast-iron house	444 30,944	846 28,621	3,604 221,538	10,422 187,945
heating boilers Steel rails Galvanized-iron sheets and	763 41,112	194 35,887	7,236 376,474	3,556 308,920
plates	6,605]	20,952	102,146]	146,587
Steel plates	24,147	26,647	219,499 1 109,706 §	216,998
Structural iron and steel Tin and terne plates Barbed wire All other wire	45,556 7,521 6,360 9,720	22,297 11,000 6,813 15,900	291,711 62,036 84,572 115,110	196,397 61,758 73,932 115,529
Totals	260,438	267,313	2,519,889	1,946,872

"Included in all "other manufactures of iron and steel" prior to July 1, 1912. §Not separately stated prior to July 1, 1912.

In April the imports of commodities for which quantities are given totaled 25,742 gross tons, against 27,247 tons in March. Details of the imports of such commodities for April and for 10 months of the current fiscal year ended with April, compared with the corresponding periods of the previous fiscal year, are as follows:

Imports o		nd Steel	-Ten m	onthe
Pig iron Scrap Bar iron Structural iron and steel Ingots, billets and other steel,	1913	1912	1913	1912
	Gross	Gross	Gross	Gross
	tons	tons	tons	tons
	14,342	4,683	127,868	92,920
	3,752	1,403	33,296	9,834
	2,646	1,795	24,434	19,056
	519	201	4,862	2,661
n. e. s. Steel rails Sheets and plates Tin and terne plates Wire rods	1,774	2,462	16,466	20,069
	725	60	3,646	2,681
	198	491	3,056	2,226
	275	125	2,065	2,688
	1,511	1,261	12,946	11,943
Totals	25.742	12.481	228 639	164.078

Imports of iron ore in April were 174,162 gross tons, against 178,502 tons in April, 1912. In the 10 months ended with April, iron ore imports totaled 1,813,424 tons, against 1,629,646 tons in the corresponding period of 1912.

The total value of exports of iron and steel, not including ore, was \$252,058,481 in the 10 months ended with April, against \$208,259,183 in the corresponding period of 1912. Figures for similar imports were respectively \$27,-162,886 and \$21,610,668.

Iron, Steel and Heavy Hardware Jobbers

Their Contract Relations with Manufacturers, Missionary Salesmanship and Other Important Questions Discussed at the Buffalo Convention

With an attendance much larger than at any previous meeting the fourth annual convention of the American Iron, Steel and Heavy Hardware Association was held at the Hotel Lafayette, Buffalo, N. Y., June 10 to 12. Three profitable and pleasant days were spent by the delegates, the time being nearly equally divided between business sessions and entertainment. Buffalo's cordial greeting and royal entertainment will long be remembered. The attendance of ladies was large and various special forms of entertainment were provided for them while the business sessions of the convention were being held.

Much time was devoted to discussions of trade conditions and the relations between jobbers and manufacturers, the latter being associate members of the organization.

The convention opened Tuesday morning with President Charles E. Faeth of Kansas City, Mo., in the chair, and addresses of welcome were made by John Sayles, secretary to the mayor, and by Charles Rohlfs, a director of the Chamber of Commerce and president of the Business Men's Association of Buffalo. Responses were made by E. R. Yarnelle, Fort Wayne, Ind., who spoke in place of ex-Gov. R. S. Woodruff, of New Haven, Conn., and by W. J. McCurdy of New Brunswick, N. J. President Faeth in his annual address referred briefly to the history of the association which held its first meeting in Chicago in 1910, and in three years had carried into effect the object for which it was formed. He said in part:

Competition and Co-operation

I am a firm believer in organized effort. I believe that in all of the affairs of men the united judgment of the many will result in the greatest good for the individual. I believe in organization for offensive and defensive, purposes. I believe in constructive organization that creates and builds and does not destroy. I believe that the strength of organization should be demonstrated, and if it is founded on principles of right and conducted with honesty of purpose its value will be proved by the test of strife. Organization is the logical method of meeting trade conditions and in this association I can see the possibility of the realization and accomplishment of all that I so firmly believe.

One of the greatest problems of this generation is so to conduct the affairs of state and nation that each individual may receive his just and due proportion of the wealth, prosperity, and happiness that has come to the people of his time. We are met in convention for the definite purpose of discussing the problems that have come as manufacturers and distributors, to the end that we may share in the responsibilities and participate in the growth of this wondrous age of man. Competition which the law of our land says must be without restraint is without doubt the question of greater importance to the individual members of this association, both active and associate. The theory on which the law of the land is made, referring to combination in restraint of trade, is, as I see it, that if two men find it necessary to enter into an agreement that arbitrarily fixes a value which will insure for themselves only a reasonable profit, then two or more men by the exercise of the same power may combine to secure an exorbitant or unreasonable profit. is against public policy. The entire elimination of competition as the result of organized co-operation is not only illegal, but, considering the greatest good to the greatest number, is unfair and unjust. On the other hand, unrestricted and unintelligent competition destroys the earning power of capital and in the end means bankruptcy from which not only the individual but the entire community suffers. You, therefore, as manufacturers and jobbers have the two extremes—inordinate profits on the one hand, and on the other bankruptcy-between which it is your problem to find the happy medium that will insure healthy trade conditions from which capital and individual effort will each receive a fair return.

In an effort to find that happy mean there would be nothing illegal or unjust in this association undertaking to educate its individual members that each would have so definite an understanding of his business that, acting individually, he would demand and secure for his merchandise a return that would include the original cost plus the cost of selling and handling plus a fair return for the capital and labor invested. To endeavor to individually educate your members so that each may know the value of his merchandise and stand and fall on his knowledge of that value is quite worthy of your consideration. To that end this convention should frankly and thoroughly discuss the actual cost of doing business. Organized effort to bring each merchant to fully understand that to the original cost must be added every cent of the cost of doing his business

before he can arrive at the actual value to which must be added a profit is well within the province of the association. The merchant who has a correct and thorough understanding of the cost of handling his merchandise will have a firm foundation on which he may build a profitable and successful business.

Keeping Contracts with Manufacturers

This convention should consider and discuss the question of contract relations with manufacturers. An effort should be made to have written into every contract that may be entered into by any member of this association a fair return for every obligation assumed on the part of the buyer and seller. So called "jug handled" contracts with a fixed obligation on the part of the seller to deliver some time and no obligation on the part of the buyer to accept is not fair, either to buyer or seller. Merchants who have little or no regard for their contract obligations may, during the period of increasing values, profit largely by assuming an obligation to purchase in excess of their normal requirements. Any effort to realize on this speculative profit is demoralizing alike to both manufacturer and distributer, each of whom may be seeking to sell on a basis of market value.

Manufacturers are endeavoring to overcome speculative contract relations by requiring the buyer to specify in a fixed proportion and at certain intervals of time. In return for this the buyer is entitled to demand that the manufacturer assume some fixed, reasonable obligation as to time of delivery. The active members of this association are merchants, not speculators, and should co-operate with the manufacturers in an effort to bring about contract relations that will be mutually fair and reasonable.

Distribution Cost Should Come Down

Producers and distributers should join in an honest effort to reduce the cost of distribution. In the method of selling and handling any of the lines in which both our active and associate members are interested, waste of any kind should be eliminated. Either you must find a way in which this can be done or the constant evolution of trade conditions will find it for you. It is a matter of common knowledge that from year to year the members of this association have an increased burden of cost to provide for. This must be taken from your profits and added to the price to the consumer. This cannot go on forever and if any of this increased burden of cost is waste, find the way to eliminate it.

Mr. Faeth recommended that the association establish a method for the exchange of credit information among members of the organization and that a bureau be established for that purpose. He also recommended that the parcel post and its effect should be discussed. He said that if it were found that the parcel post had materially increased the number of orders without adding to the volume of business it followed the cost of business was increased. This increase he said could be taken tare of either by the jobber taking less return and absorbing the advance or by adding to the selling price.

The chair announced the death in the past year of the following members: George Edward Holden, president of the Bryden Horse Shoe Company, Catasaqua, Pa.; A. J. Roat, founder of the A. J. Roat Supply Company, Kingston, Pa.; J. Henry Ruwe, of Ruwe Bros., Brooklyn, N. Y.; C. C. Griswold, of Griswold-Sohl Company, Columbus, Ohio. Committees were appointed to draft resolutions of

respect.

Hardware Dealers Looking for Other Lines

Thomas J. Fernley, secretary-treasurer of the National Hardware Association, in a few remarks referred to the recent patent decision relating to a druggists' commodity, in which the Supreme Court held against the right of a patentee to fix a resale price. In view of the fact that various props had been taken from manufacturers and dealers he believed there was an opportunity for associations to secure increased benefits from co-operation. He referred to a secret ballot taken at a previous convention which showed that it cost slightly over 15 per cent. to distribute hardware and kindred merchandise and stated that now hardware dealers are looking for new lines to add to their stock.

William H. Grant, Kansas City, Mo., president of the National Association of Heavy Hardware Jobbers, expressed his belief in jobbers' associations, both large and

He said that small local associations are able to acsmail. complish considerable good work that was out of reach of large national associations and he favored the formation of such local associations. While formerly a certain amount of odium was generally attached to membership in an association, such membership is now a badge of honor. C. Watrous, Providence, R. I., spoke of the National Association of Allied Horse Interests. He explained that this association was not formed to put the automobile out of business, as the motor car had come to stay, but he said that there would be horses for a long time to come and that the object of this association was to give the horse a fair show and to stimulate lines of trade in connection with the horse,

Remunerative Rates for Railroads

At the executive session Tuesday afternoon E. R. Yarnelle, secretary-treasurer, made his report, and the programme also included reports by the executive, spring and axle, and woodstock committees. The executive committee report was submitted by C. N. Roehm of Roehm & Davison, Detroit. Among the topics discussed in this committee's report were direct factory competition, cost of doing business, terms, prices and premiums, and railroad rates. The committee stated that a year or two ago the railroads asked the Interstate Commerce Commission for permission to advance freight rates, which request was denied. Since this decision, the report adds, conditions seem to have changed and because of increased and still increasing cost of operation the railroads are entitled to a reasonable in-The railroads are a material factor in the commercial success of the country and unless they are permitted to do business on a remunerative basis not only they but the entire commercial organization will suffer. The executive committee also urged the members to aid in the one-cent postage movement.

At the executive session Wednesday morning Julius H. Jahnz, chairman, submitted a report for the transportation committee, and W. R. Wilson, vice chairman, read a report of the nail committee. This was followed by a paper by E. W. A. Waterhouse, Waterhouse & Lester Company, San Francisco. The remainder of the session was devoted to the distribution of blacksmith's supplies and its control, this discussion being led by F. H. Butts, Butts & Ordway Company, Boston, and Herbert Field, Congdon &

Carpenter Company, Providence, R. I.

Missionary Salesmen and Entertainment

At the convention last year a committee was appointed to investigate the policy of selling by missionary salesmen and to present some plan to obviate certain objectionable features. This committee, of which Henry Bodevin was chairman, recommended that in order to correct abuses of the present system of using missionary salesmen the following provisional measures be adopted:

That jobbers take the stand that their men shall not travel with any factory missionary, and that factories discontinue this practice on the part of their representatives.

That gifts of goods or money by factories to influence the placing of orders be abolished.

That all complaints against missionary salesmen be sent to the National secretary's office for adjustment, and that manufacturers be invited to send complaints of jobbers' actions to the same office for consideration.

That manufacturers try to put a check on extravagance on the part of their salesmen, especially in entertainment that furnishes an expensive precedent for jobbers to follow.

That manufacturers give instructions that no business be diverted from one jobber to another, provided the first jobber will fill the order, and that jobbers shall not specify one brand for another in filling orders.

That blacksmiths shall sign all orders taken by missionary salesmen and designate on the order the name of the dealer through whom they want the goods shipped.

W. J. McCurdy, Neverslip Mfg. Company, New Brunswick, N. J., said the time would never come when the manufacturers could do without missionary salesmen and that was wrong to try to do without them. He declared that it was the manufacturer's place to create a demand for products and not the dealer's place, and that jobbers should handle goods that were nationally known through advertising and missionary work. He thought it only fair to manufacturers for the jobbers to support the class of merchandise that was made known to the trade through ad-

vertising and missionary work. In replying to some of the statements made by Mr. McCurdy the chair stated that the organization had never urged the total elimination of missionary salesmen.

Steel Manufacturers and Small Consumers

W. G. Clyde, assistant general manager of sales, Carnegie Steel Company, spoke at some length regarding the policy of the Steel Corporation. He said that the corporation's policy of establishing a number of warehouses throughout the country was not with the idea of putting anybody out of business. In the months in which the mills have been behind on deliveries, it has been the policy of the Carnegie Steel Company to pay particular attention to small manufacturers in the matter of deliveries so that the latter would not be compelled to shut down for lack of material.

During the executive session Thursday evening a report of the horseshoe committee was made by Grant, chairman, a report of the bolt and nut committee by A. J. Chase, chairman, and a report of the iron and steel committee by A. H. Inman, chairman. Following the presentation of these reports the remainder of the session was devoted to the discussion of the present aspect and future prospect of the heavy hardware business. discussion was led by Charles M. Roehm, Roehm & Davison, Detroit; James A. Coe, James A. Coe Company, Newark, N. J.; E. P. Sanderson, E. P. Sanderson Company, Boston; E. R. Yarnelle, Fort Wayne, Ind., and L. H. Williams, Williams Hardware Company, Minneapolis, Minn.

To Confer with Manufacturers on Contracts

Following the recommendation made in the president's address the convention voted to establish a credit bureau, the details for the present being left in the hands of the executive committee. On the subject of contract relations action was taken favoring conference with manufacturers with a view to drawing contracts that will eliminate the present objectionable features and at the same time be fair both to the buyers and sellers and give as much consideration to producers as to jobbers. Action was also taken favoring a federal incorporation law. The cost of distribution was the subject of considerable discussion. A committee was appointed to take up this matter and make suggestions that will be of benefit to the members, enabling them to effect economies in their business without sacrificing efficiency.

New Officers

New officers were elected as follows at the closing session Thursday afternoon:

President-Charles M. Roehm, Roehm & Davison, Detroit, Mich.

First vice president-E. W. A. Waterhouse, Waterhouse & Lester Company, San Francisco.

Second vice president-J. A. Gregg, Nicols, Dean &

Gregg, St. Paul, Minn.

Executive committee—Henry Bodevin, N. Langler & Sons, Brooklyn, N. Y.; George E. Enos, Enos & Sanderson Company, Buffalo, N. Y.; H. E. Tredway, John Ernsdorff Iron Company, Dubuque; Iowa; Fred Guethlein, G. B. Schulte & Sons Company, Cincinnati; F. H. Butts, Butts & Ordway Company, Boston; and W. H. Grant, Bonniwell-Calvin Iron Company, Kansas City, Mo. Cleveland, Ohio, was selected for the convention of 1914,

the dates to be decided upon later.

Excursions and Banquet

On Monday afternoon, before the opening of the convention, the visitors enjoyed a lake trip and were taken to the plant of the Lackawanna Steel Company. Wednesday afternoon was taken up with a trip to Niagara Falls and the inspection of the plant of the Buffalo Bolt Com-Luncheon was served at the plant. The return trip from Niagara Falls was made early in the evening. In the forenoon of the same day the ladies were taken on a trip to the Falls and were entertained with a luncheon at the Clifton House, Niagara Falls, Ont.

A very enjoyable entertainment was the informal dinner and dance Tuesday evening at the club house of the Buffalo Automobile Club, to which the visitors were taken on a special train. Special entertainment for the ladies included a theater party Wednesday evening, an automobile trip Thursday morning and a dinner and card party

Thursday evening.

The convention closed with a banquet at the Hotel Statler Thursday evening which was an elaborate affair. Several surprises were sprung by the banquet committee, not least of which was a series of cartoons of men prominent in the association, which were projected on a screen by means of a stereopticon. The principal speakers were Colonel H. P. Bope, first vice president Carnegie Steel Company; Judge William H. Speer, Jersey City, and Rev. George Frederic Williams of Buffalo. Colonel Bope spoke on the relations of the manufacturer and the jobber. His address was an eloquent plea for better understanding and especially for the co-operation that would tend to cement the relations between the different bodies of men engaged in the same line of business and in time solve many of the problems with which the country is concerned today. He laid particular stress on the humanitarian principles which he said are foremost in large business enterprises today. Judge Speer spoke of the present unsettled state of the country which he attributed largely to the demagogue. He advised that businessmen settle the problems which confront them with calm deliberation and in a spirit of patriotism and common sense. He felt that the constitution under which this country has developed to its present state of growth and prosperity is not a worn out document but could carry us along for another one hundred and twenty-four years of prosperity, and he warned those present to beware of the mob oratory which tends to unsettle our institutions and menace our prosperity and high standing.

Machinery Exhibit at Atlantic City

Large Display of Machine Tools and Railroad Devices for Master Mechanics and Master Car Builders

In connection with the annual conventions of the American Railway Master Mechanics' Association and the Master Car Builders' Association, Atlantic City, N. J., June 11 to 18, the usual exhibition of railroad appliances, accessories and machine tools was conducted by the Railway Supply Manufacturers' Association. This year's exhibit occupied 88,222 sq. ft., the space having been en-

larged by 4715 sq. ft. over that of last year.

Practically all the exhibits were housed on the Million Dollar Pier, some of them under canvas. A few were shown on convenient railroad tracks. Every nook and corner was occupied and a few late applicants for space could not be accommodated. Several manufacturers contented themselves with reception booths only and showed no products, but the presence of new exhibitors and the greater space taken by others more than compensated for any falling off in display of machinery. Up to the close of the Master Mechanics' convention July 13 about 3500 had registered as in attendance, and with the coming of the Car Builders in large numbers the figure was expected to exceed 5000.

An innovation this year was the elimination of the usual ball game on the Saturday which intervened between the two railroad conventions and the operation of the exhibit through that afternoon. At all times the display was well patronized, a large proportion of the visitors consisting of the general public. Great interest was shown, especially in the machinery in actual operation. A few sales of machine tools were reported as having been practically consummated at the show, but as a rule these were not expected, most of the exhibitors regarding the exhibition as educational. The machinery exhibit, as an experiment, was open also on the evening of Monday, June 16.

At the annual meeting of the Railway Supply Manufacturers' Association held June 14, the following officers were elected: President, Benjamin A. Hegeman, Jr., U. S. Metal & Mfg. Company; vice-president, J. Will Johnson, Pyle National Electric Headlight Company. Members of the executive committee, C. B. Yardley, Jr., J. C. Currie, C. F. Elliott and Joseph H. Kuhns.

Among the several hundred exhibitors were the following:

American Locomotive Company, New York, N. Y.—Reception booth.

American Pulley Company, Philadelphia, Pa.—Pressed steel pulleys for electric car lighting; pressed steel wheels for inspection and hand cars; pressed steel split pulleys for line shafting, and etc.

American Steel Foundries, Chicago, Ill.—The Vulcan truck;

Andrews side frames; cast steel bolsters; Simplex bolsters; brake beams; Davis cast steel wheels; Simplex couplers; Alliance rouplers; Susemihl roller side bearings; springs; miscellaneous castings.

American Tool Works Company, Cincinnati, Ohio.—One 30-in. x 14-in. motor-driven American lathe; 16-in. x 8-in. motor driven American toolroom lathe; 6-in. American motor-driven radial drill; 3-in. American motor-driven radial drill; 24-in. American back-geared crank shaper.

American Vanadium Company, Pittsburgh, Pa.—Reception booth, Baush Machine Tool Company, Springfield, Mass.—One 6-ft. heavy-geared radial drill; automatic staybolt drilling machine.

Berry Brothers, Detroit, Mich.—Finished panels of wood and iron; samples of raw material; a demonstration of spar varnish.

Besly & Company, Charles H., Chicago, Ill.—No. 51-26-L motordriven Besly disk grinder; No. 15-30-C Besly pattern maker's disk grinder; Helmet temper taps, spiral circles and oil; display case of Helmet temper taps; samples of work done on Besly disk grinder.

Best, W. N., New York, N. Y.—Oil and tar burners for locomotive, marine and stationary boilers, also for furnaces of various types and sizes; portable furnaces for welding locomotive frames, heating rails for bending, raising steam and other purposes.

Boker & Company, Hermann, New York, N. Y.—Tool steel.
Buffalo Foundy & Machine Company, Buffalo, N. Y.—Gun iron
castings as applied to locomotive cylinders, bushings, cylinder rings,
valve cages and superheaters, illuminated transparencies showing
products, Bell steam hammer, vacuum pumps, etc.

Bullard Machine Tool Company, Bridgeport, Conn.—36-in. vertical turret lathe, new era type, in operation; unit details of construction showing continuous flow system of lubrication; test samples of crucible chrome nickel steel used in construction.

Carborundum Company, Niagara Falls, N. Y.—Carborundum and Aloxite wheels; Carborundum brand garnet paper; Aloxite cloth.

Carey Company, Philip, Cincinnati, Ohio.—Magnesia and asbestos products; pipe covering; car insulation; roofing; deco veneer for wainscoting interior trim, etc.

Carnegie Steel Company, Pittsburgh, Pa.—Schoen solid steel wheels; freight car wheels with standard and large hub; slick gear blanks; heat-treated axles; steel sheet piling; steel cross ties and Duquesne joints; vanadium steel for railway service.

Chicago Pneumatic Tool Company, Chicago, Ill.—Chicago pneumatic air compressor; pneumatic hammers, drills, rivet busters, etc.; portable electric drills and grinders.

Cincinnati Bickford Tool Company, Cincinnati, Ohio.—One 6-ft. Cincinnati Bickford high-speed, high-power, plain radial drill; one 28-in. Cincinnati high-speed shaft-driven upright drill with tapping attachment.

Cincinnati Planer Company, Cincinnati, Ohio.—One 36-in. x 36-in. x 8-in. new heavy pattern, reversible motor-driven planer with four heads.

Detroit Hoist & Machine Company, Detroit, Mich.—Pneumatic and electric turntable tractors; pneumatic and electric hoists; pneumatic motors.

Detroit Lubricator Company, Detroit, Mich.—Bullseye locomotive lubricators; air cylinder lubricators; air pump lubricators; transfer fillers; boiler valves; balanced throttle valves; mechanical force-feed oilers; flange lubricators.

Dixon Crucible Company, Joseph, Jersey City, N. J.—Graphite products specially prepared for railway use; Dixon ailica-graphite paint; air brake graphite and graphite greases; lubricating graphite; crucibles; belt dressing; graphite brushes; boiler graphite; pipe-joint compound; engine front finish; both dry and liquid.

Duff Manufacturing Company, The, Pittsburgh, Pa.—Genuine Barrett track and automatic lowering jacks; Duff ball bearing screw jacks; Duff high-speed screw jacks; Duff-Bethlehem forged-steel hydraulic jacks.

DuPont de Nemours Powder Company, E. I., Wilmington, Del.—Fabrikoid artificial leather for upholstery; vestibule curtain material; car curtain material.

Edison Storage Battery Company, Orange, N. J.—Edison storage batteries for car lighting, operation of railway signals, telephone train dispatching, ignition and stationary lighting, and etc.

Electric Controller & Manufacturing Company, New York,

Electric Controller & Manufacturing Company, New York, N. Y.—Lifting magnet in operation; automatic motor starters; automatic controllers; reversing planer drive; drum controllers; solenoid brakes, etc.

Solenoid brakes, etc.

Gilbert & Barker Mfg. Company, Springfield, Mass.—Selfmotive on the track at Mississippi avenue; on Young's Pier,
standard electric equipment for railway shops and service; reversing electric motor planer drive equipment; carwheel lathe control panel; arc-welding outfit; five types of motors; three types
of flow meters; battery truck crane; type "W" and Mazda lamps;
headlights for urban and interurban railway service; Curtis turbogenerator train-lighting set; Pullman type fan motors.

generator train-lighting set; Pullman type fan motors.

Gilbert & Barker Mfg. Company, Springfield, Mass.—Self-measuring pumps; oil-storage systems for railroads; signal oil tanks; lubricating tanks; saturating waste tanks; underground

storage systems; gas and oil furnaces.

Goldschmidt Thermit Company, New York, N. Y.—All materials and appliances used in welding locomotive frames, driving wheel spokes, connecting rods, mud rings, crossheads and for gen-

eral cpairs in a railroad shop. Metal and alloys free from carbon, particularly samples of ferro-titanium to purify and improve the quality of iron and steel. Materials for welding pipe by the thermit process.

Gould & Eberhardt, Newark, N. J .--New 28-in. Invincible shaper embodying many new features with direct-connected variable-speed electric motor with automatic starter and dynamic brake; 12-in. high-duty gear-hobbing machine with electric-motor drive. Machine will be operated and spiral gears for air-brake compressors will be cut on it. A sectional frame of a 16-in. high-duty shaper showing inside construction and arrangement of gearing, etc.

Harrington, Son & Co., Edwin, Inc., Philadelphia, Pa.— Overhead I-beam track; switch and turntable; peerless hoist; screw hoist; plain and geared travelers to operate on lower flange of Ibeam; one 16-32-in. extension bed-gap lathe, belt driven.
Heppenstall Forge & Knife Company, Pittsburgh, Pa.—Pressed

driving axles; bammered driving axles; shear knives and die

Illinois Steel Company, Chicago, Ill.—Rails; axles; tie plates; base plates; special rail joints; angle bars; spikes; screw spikes; bolts; structural shapes; plates; merchant bar mill material.

Independent Pneumatic Tool Company, Chicago, Ill .- Thor pis ton air drills, reversible and non-reversible, for flue rolling, reaming, tapping, wood boring, setting locomotive valves, drilling; closedrills for drilling, reaming and tapping in close corners; pneumatic grinders for grinding and buffing; one-piece pneumatic riveting hammers; chipping, calking and flue beading hammers; pneumatic staybolt drivers; holders on; hose; couplings and Thor electric drills.

International Oxygen Company, New York, N. Y .- I. O. C. system oxygen and hydrogen producing equipment, consisting of 4 I. O. C. cells improved, and electrical equipment; capacity of plant 12 cu. ft. of oxygen and 24 cu. ft. of bydrogen per hour, consuming 8.8 volts by 400 amp. Purity of oxygen above 99 per

cent., hydrogen 99.8 per cent.

Jenkins Bros., New York, N. Y.—Brass and iron body globe, angle and gate valves; horizontal, vertical and swing check valves; gate, globe and angle hose valves; steel valves for superheat; traps and gauge cocks; "Y" valves for roundhouse and water service; radiator valves; reducing valves; sheet packing, pump valves, gasket tubing and mechanical rubber goods, etc.

Jessop & Son, Inc., Wm., New York, N. Y.—Samples of steel; tools manufactured from Jessop's steel; finished saws and saws in the rough; fractures.

Johns-Manville Company, H. W., New York, N. Y.—Steel-car insulations; pipe coverings; boiler laggings; asbestos materials; molded and electrical materials; electrical fiber conduit; asbestos shingles; waterproofing; mastic; fire extinguishers; asbestos and regal roofing; packings; brake-cylinder expander rings; flexible armored hose; cork; refrigerator-car insulation, and etc.

Jones & Laughlin Steel Company, Pittsburgh, Pa.-Railroad spikes; chain; steel sheet piling.

Keystone Drop Forge Works, Chester, Pa.-Keystone connecting link; Keystone safety shackle hook; special drop forgings.

Landis Machine Company, Waynesboro, Pa.—2-in. single-head bolt cutter; 1½-in. double-head bolt cutter, motor driven; 2-in. stationary pipe die head; 8-in. stationary pipe die head; 1/2-in. automatic screw-cutting die head, etc.

Landis Tool Company, Waynesboro, Pa.—16-in. z 72-in. plain

grinding machine with gap; No. 3 universal grinding machine; actual demonstration in grinding piston rods, valve yoke stems, etc.; also full line of finished locomotive parts, which can be ground on a precision grinding machine.

Lodge & Shipley Machine Tool Company, The, C.ncinnati, Ohio.—One 24-in. x 10-ft. engine lathe with motor-driven selective head, apron control for motor, connected compound and plain rests with four-way tool block, multiple stops for length and cross feeds, pan, pump and tubing. One 18-in. x 8-ft. engine lathe with motordriven selective head.

Lucas Machine Tool Company, Cleveland, Ohio.-No. 31 Lucas

precision horizontal boring, drilling and milling machine with vertical milling attachment; standard No. 33 Lucas Precision horizontal boring, drilling and milling machine.

Manning, Maxwell & Moore, Inc., New York, N. Y.—Hendey No. 3 geared-spindle milling machine; Hendey 16-in. engine lathe; Hendey 24-in. engine lathe; Hendey centering machine; No. 8 Lincoln type miller; LaPointe No. 1 broaching machine; LaPointe No. 3 broaching machine, motor driven; 11/4-in. four-spindle Grid-ley turret lathe, motor driven; 41/4-in. Gridley turret lathe, single pattern, motor driven; Cincinnati 24-in. erank planer, motor driven; Cincinnati 32-in. motor-driven shaper; Cincinnati 24-in. belt-driven shaper; Lea motor-driven cold saw; National 11/2-in. ten-spindle motor-driven nut tapper; National 11/2-in. motor-driven double-bolt National 11/2-in. motor-driven double-staybolt cutter; National 11/2-in, triple-bolt cutter; National 11/2-in, motor-driven quadruple-bolt cutter; Bignall & Keeler 2-in. motor-driven ptpe machine; Dreses 5-ft. new heavy-pattern motor-driven plain radial drill; F. E. Reed 20-in. x 12-ft. motor-driven engine lathe; F. E. Reed 18-in. ft. motor-driven geared head engine lathe; F. E. Reed x 7-ft. motor-driven geared head engine lattle; F. E. Reed 16-in. x 6-ft. belt-driven engine lattle, motor driven; F. E. Reed 16-in. x 6-ft. belt-driven engine lattle, with latest attachments; Morse No. 2 universal grinder, motor driven; Morse belt-driven No. 1 plain grinder; Morse double wheel wet emery grinder; Hancock locomotive inspirators, lifting and non-lifting types in various forms;

Hancock main steam valves in various forms; Hancock boiler check valves; Hancock hose strainers; Hancock stationary in-spirators; Hancock ejectors; Hancock boiler washers; Hancock globe and angle valves; Hancock check valves; Metropolitan injectors; H-D ejectors; consolidated locomotive pop safety Ashcroft steam, vacuum and pressure gauges; Tabor indicators;

Ashcroft pipe fitters' tools; Ashcroft paper testers and gauges.

Mark Mfg. Company, Chicago, Ill.—Cold-drawn steel unions;

cold-drawn brass unions.

Milburn Company, The, Alexander, Baltimore, Md.—Milburn portable lights for wrecking and construction purposes; oxy-acetylene welding and cutting apparatus; steam actylene generator for locomotive headlights; Milburn carbide hand lantern for railroad inspection; Milburn home gas machine for lighting isolated stations, freight houses and for signal purposes.

National Tube Company, Pittsburgh, Pa.-Specialties, etc., reception booth.

Newhall Engineering Company, George M., Philadelphia, Pa. Photographs of wrecking and locomotive cranes, railroad pile drivers, etc.; prints of boiler washout plants.

Norton Company, Worcester, Mass.—Alundum and crystolon grinding wheels and other abrasive products.

Norton Grinding Company, Worcester, Mass .- Grinding machin-

Nuttall Company, R. D., Pittsburgh, Pa.-Cut gears and pinions; electric locomotive gears, pinions and trolleys; railroad ma-chine-tool gears and pinions; flexible couplings; gear-cutting machines in operation.

Parkesburg Iron Company, The, Parkesburg, Pa.—Charcoal iron boiler tubes; safe ends; arch tubes and locomotive superheater tubes

Quigley Furnace & Foundry Company, Springfield, Mass.-Powdered-coal and oil-burning equipment and furnaces.

Reed Mfg. Company, Erie, Pa.—Machinists' vises; pipe tools. Ryerson & Son, Joseph T., Chicago, Ill.—Samples of Ulster cial staybolt iron; Ulster engine-bolt iron; Loco Jacket steel; XX iron; Nikrome steel for piston rods, crank pins, etc.

Sargent Company, Chicago, Ill.—Ironclad safety water gauge; E. S. E. reflex gauge; E. S. E. blow-off valve; E. S. E. water glass cock; Loedige quick-acting blower valve.

Sprague Electric Works, New York, N. Y.—Sprague steel-armored air-brake hose; steel-armored car-heating hose with steelarmored fittings; steel-armored shop hose; flexible steel conduit, cable and fittings; Greenfield galvanized conduit; electric hoists;

electric freight handling trucks; electric fans.

Standard Roller Bearing Company, Philadelphia, Pa.lar ball bearings; annular roller bearings; journal roller bearings; roller motor bearings; standard taper roller bearings; roller thrust bearings; sall thrust bearings; roller bearings; roller bearings; roller bearings; Rudge-Whitworth wire automobile wheels; steel and bronze balls.

Titanium Alloy Mfg. Company, Niagara Falls, N. Y.—Titanium-treated steel, copper, bronze and brass.

Underwood & Co., H. B., Philadelphia, Pa.—Portable cylinder berge berg cortable carbonium steels.

der boring bar; portable crank-pin turning machine; special portable rotary planing machine; circular planer tool; portable cylinder dome facing machine; hand pipe-bending machine,

Union Spring & Mfg. Company, Pittsburgh, Pa.-Kensington all-steel journal boxes; coil springs; elliptic springs; wire springs; pressed-steel spring plates and pressed-steel journal box lids.

U. S. Metal & Mfg. Company, New York, N. Y.—Reception

booth.

United Engineering & Foundry Company, Pittsburgh, Pa .-

Photographs of "High-speed" steam-hydraulic forging presses.

Vixen Tool Company, Philadelphia, Pa.—Vixen files and resharpening machine in operation.

Warner & Swasey Company, The, Cleveland, Ohio,-

sal hollow hexagon turret lathe on bar work; 2A universal hollow hexagon turret lathe on chucking work.

Watson Stillman Co., New York, N. Y.—Complete hydraulic power plant, consisting of motor-driven pump and hydropneumatic accumulator, from which are run one hydraulic broaching press and a new design of hydraulic coupler yoke-shearing and press; air engine driven hydropneumatic pit jack; Chambers throttle valve with full section model of locomotive boiler and dome showing position of valve in dome, and small hydraulic tools.

Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.-Reception booth.

Westinghouse Lamp Company, Pittsburgh, Pa.-Reception booth. Wiener Machinery Company, New York, N. Y .- Solid steel triple-combination punch, shear and bar cutter, type S. C. G. 20; solid-steel coping machine, type A 500.

Wiley & Russell Mig. Company, Greenfield, Mass.—Staybolt taps; boiler taps; patch-bolt taps; machinists' hand taps; machinescrew taps; spiral-fluted reamers; straight-fluted reamers, and etc.

Wilmarth & Morman Company, Grand Rapids, Mich.-No. J wet-surface grinder, motor driven; style "DX" combination cutter, reamer and drill grinder, motor driven; new Yankee drill grinders, both belt and motor driven; lathe center grinders; combination

water tool and drill grinder; Nelson patent loose pulleys.

Yale & Towne Mfg. Company, The, New York, N. Y.—Improvements in electric hoists; chain blocks and trolleys—moving models; special ammunition bandling devices; burglar exhibit; coach-door checks applied to car door; signal and general service padlocks; indicators padlocks; master key locks for dining cars.

Chairman Gary and the Subsidiary Companies

Frankly States That in the Steel Corporation's Early Days He Was Not so Careful as One of the Directors of Its Subsidiaries as He Is at Present

At the hearing in the Steel Corporation dissolution suit on Wednesday, June 11, Chairman E. H. Gary frankly admitted, in the continuance of his cross-examination, that he had been remiss in letting pass some of the statements made at meetings of the directors of subsidiary companies. Throughout the cross-examination he has insisted that he fought in the meetings of the board of directors of the United States Steel Corporation for a policy that should be above complaint and in that he was successful. hesitatingly criticised the conduct and the method of certain men connected with the Carnegie Steel Company and admitted he did not know that those men were talking in the way as shown in the minutes of the meetings of the board of directors of that subsidiary. "You can prove almost anything you want from those minutes," he said pleasantly to Judge Dickinson, the Government attorney, and added: "I have tried to be very frank with you. There have been a good many things in earlier days that I hoped had been entirely eradicated."

The Shelby Tube Acquisition

Judge Dickinson read from the minutes of the finance committee of the Steel Corporation in 1901, shortly before the Shelby Tube Company was acquired, a statement that the Carnegie Steel Company, a subsidiary, had a contract with the Shelby Company to supply it with steel, which was "highly favorable to the Carnegie Company, as the Carnegie Company can so arrange its prices as to keep the Shelby Company from doing business." Judge Gary was quoted in the minutes as saying: "I would a great deal rather have the Shelby Company under our control than to absorb it." When this was read Judge Gary said:

I am sure that I did not use the words attributed to me. I was not in favor of buying the Shelby plant at that time, and doubtless what I said was that I would rather sell them steel than buy them out.

Q. Rather sell them steel under an arrangement that would keep them from doing business

A. I am sure that was not what I meant. I was foolishly lax in permitting such statements to be made.

Q. It was an error of the head and not the heart, then?
A. Yes, although I do not want to excuse myself. I
am sure if you had been in my place you would have done the same thing.

His frankness was again shown when he was questioned about the meeting of a board of directors of another subsidiary, namely, the National Tube Company. He said:

I do not think that I was as careful as a director in those days as I think I am now. I believe we all have been stirred up to more careful attention to the affairs of corporations in which we are directors.

Contracts with Parties Bought Out Not to Re-enter Business

Judge Gary was called upon to reconcile several contracts with persons bought out not to enter the steel business again with his expressed desire to "foster competi-One was with the owners of the Union Steel Company, made when it was taken over, under which they agreed to stay out of the steel industry for ten years, except in Arizona and Florida. Judge Gary's name was signed to this. He said he did not recall having read the contract when he signed it. In general, he said, he did not approve of such agreements. Under some circumstances, however, he thought it proper for the seller of a business to agree to stay out for a period of years.

A similar clause was contained in the contract for the acquisition of the Oliver ore properties in 1903, and Judge Gary was asked if this was in the direction of fostering

competition. He said:

That would depend upon circumstances. If the purchaser of a business should obtain, as a part of the consideration, an agreement that the seller would not enter into competition with him, it would be proper, and in many cases would not restrain trade. Under other circumstances restraint of trade might be involved. It depends on the actual conditions.

A third contract of this kind was made with William E. Reis, which Judge Gary explained as having arisen out of a dispute with him concerning his contention for his unexpired term as president of one of the subsidiaries, The dispute was settled by Mr. Reis agreeing not to enter the steel business for three years.

What Constitutes a Monopoly

At the hearing on Thursday, Judge Dickinson precipitated a discussion of the question as to what constitutes a monopoly by asking Judge Gary what in his opinion would represent a tendency toward monopoly and restraint of trade. Judge Gary said he did not know, but he added:

If you want to ask me what I think would be safe for a manufacturing concern at the present time, in view of all the information I have, to maintain as a percentage in order to avoid the danger of being charged with being a monopoly, I might give you an opinion.

But Judge Dickinson thought that might consume time and passed it. He wanted to know if Judge Gary had any definite idea in 1901 as to what constituted a monopoly in the iron and steel industry. To that Judge Gary replied that he did not have any exact percentages figured out.

Questioned as to the organization of the American Steel & Wire Company, he said that the company controlled 64 per cent of the industry at the time it was acquired. Judge Dickinson wanted to know if Judge Gary did not think that was a monopoly, to which the latter replied:

If there is a decision which tells you and me what constitutes a monopoly, I would like to see it. Our policy was so free from any bad intentions when we took these companies over that we did not consider the question of what percentage formed a monopoly.

He added that had the organizers of the Steel Corporation desired to form a monopoly the one company that they would have sought to get would have been the Jones & Laughlin Steel Company. He admitted having told the Ways and Means Committee of the House of Representatives that the Steel Corporation controlled 70 per cent. of the ores in the Lake Superior district. "I found out later," he said, "that I was terribly mistaken."

Competition Between Carnegie and Illinois Company

In reply to a question, Judge Gary admitted that the Carnegie and Federal Steel companies were in competition to some extent when they were combined. Judge Dickinson was bent on showing that the backbone of the great combination was the merger of two competing companies. Judge Gary had made the same admission to the Stanley Committee, and Judge Dickinson read this from his testimony before that committee concerning the Carnegie Company and the Illinois Steel Company, afterward the Federal:

They were substantially in competition—I don't want to minimize that—especially in rails, but when you con-sider the respective territories of the two, there was not so much competition as would appear.

Judge Gary said that this testimony was correct and that at one time the Carnegie Company sold rails in the Chicago district at \$18 a ton. He added:

I willingly admit that this had a great effect on the Illinois Steel Company. It forced the Illinois producers to sell their rails below cost, and they were fast getting into bankruptcy.

The Federal and the Carnegie companies each produced rails, sheared plates, tin plate bars, billets and merchant steel. Judge Gary said he did not think the Carnegie Company made any profit by selling rails in the Chicago dis-

Q. Would you be surprised to learn that the records show that rails were the chief business of the Carnegie Company and showed the most profit?

A. I would like to say that in the old days methods of bookkeeping were such that the books frequently showed a profit where there was no profit. In justice to Andrew Carnegie, I wish to say that since 1897 there has been a very material change in this respect, largely due to Charles M. Schwab.

There were questions about a trade war and on that point Judge Gary testified: "There always was a trade war threatened, as there is now."

He referred to the Inland Steel Company as "a pretty vigorous baby" at the time the Steel Corporation was formed. Concerning the Carnegie Steel Company in 1897, he said, "It had a capital of \$25,000,000 and its properties were actually worth \$300,000,000."

No Rebates Accepted

Rebates was another subject discussed. Judge Gary told of a letter he had written to the heads of the various subsidiary companies forbidding them to accept rebates. Judge Dickinson, after asking certain questions about the traffic association of the corporation, inquired concerning the minutes of that association prior to 1906. Judge Gary referred this question to his counsel and a slight controversy was precipitated between Richard V. Lindabury, of counsel to the corporation, and Henry Colton, Judge Dickinson's assistant. Mr. Lindabury announced he would not permit the insinuation to creep in the records that he had refused to produce certain books, whereas, as a fact, every courtesy had been extended to the Government officials. Judge Gary then said:

I am perfectly willing to have Judge Dickinson ask me anything he pleases about rebates, if he thinks there are or ever were any. I have nothing to conceal and I will be perfectly frank with you.

Judge Gary said that his corporation usually kept a bank balance of about \$65,000,000.

The Tennessee Company Purchase Up Again

At Friday's hearing Judge Dickinson took issue with the explanation given by Judge Gary of the purchase of the Tennessee Coal, Iron & Railroad Company. Judge Gary had testified that he and Henry C. Frick had agreed that the Tennessee stock was worth not more than 50 cents on the dollar, but they and their associates had paid more than par for it to prevent the failure of Moore & Schley and a spread of the panic of 1907. In reply to a question, Judge Gary said he had not liked the Steel Corporation's purchase of the Tennessee Company, but that it was the best way out of a bad business. He said he was told that the step was necessary to halt the money panic. He declared that the money that went into that company could have been used to much greater profit by improving the corporation's own plants.

Judge Dickinson wanted to know if it would not have been cheaper for the Steel Corporation to loan, or even to give, Moore & Schley the \$10,000,000 or \$15,000,000 needed to see them through their difficulties than to pay \$35,000,000 for a property worth only half that and on which it had since found it necessary to spend \$14,000,000 to put it on its feet. Judge Gary replied in the negative. He said:

We in the finance committee had to give an account to the stockholders, and I doubt if they would have excused such action, even to relieve the situation existing at that time. We had to do business so as to work out of that situation and get a return on the investment. I believe we did the best and most prudent thing under the circumstances. Moore & Schley could not have given us good security for such a loan, and they gave us no opportunity to make such a loan. Lewis Cass Ledyard, representing Moore & Schley, was trying to sell the property, and that was the proposition that came to us. I will say, however, that if a loan had been proposed we would not have made it. It would not have been good business. There are a good many ways in which we could have made plenty of money if we had been so disposed at that time, with our \$75,000,000 in the bank.

Judge Dickinson did not ask how. It is said that the \$75,000,000 Judge Gary referred to was the largest amount of cash loose in the days of 1907.

The Jackson Pools Inquired Into

Judge Dickinson took up the Jackson pools, the members of which were indicted and fined in 1911. Judge Gary had testified that he had ordered the Steel Corpora-

tion's subsidiaries out of all pools in 1904 and did not know of the American Steel & Wire Company's participation in the Jackson pools until 1908, when a stranger came into his office and told him of it, at the same time demanding a job. Judge Dickinson asked what steps had been taken by Judge Gary in 1904 to inform himself that his orders had been carried out, to which the reply was:

None. I had not been looking for burglars in my house, either. I assumed that our solicitor general's office had disposed of all the pools, and I have no doubt they thought so too.

so, too.

Q. What disciplinary steps did you take on learning, four years later, that your orders had not been carried out?

A. I did not discharge anybody. I used emphatic language, but I was satisfied that nothing of the kind would occur again. If these men had offended again the penalty would have been severe.

Judge Dickinson read extracts from trade papers reporting as late as September, 1905, meetings of various steel associations, at which, it was said, prices were agreed upon. At one, W. E. Corey, then president of the Steel Corporation, was reported as being present. At another it was stated that it was voted to investigate alleged pricecutting by members.

Judge Gary said he had never read these articles, and was surprised that such meetings were held at so late a date.

"I am surprised the Government did not take notice of them," he added.

"Well," replied Judge Dickinson, "it takes the Government a long time to get started, but when the mills do grind they grind exceedingly fine."

"And sometimes both the just and the unjust," re-

marked Judge Gary, with a smile.

Answering a question, Judge Gary said he did not recall giving out a statement that was published in the newspapers after a Gary dinner in 1908, saying "it was the consensus of opinion of the manufacturers present" that certain prices be reduced. Another statement was read purporting to have been made by Judge Gary after a Gary luncheon in 1911, that the Steel Corporation intended to meet reductions made by the Republic Iron & Steel Company, and that "it is believed these prices will be generally followed." He said he had made the statement, but someone else had inserted the prices stated. "No one," he said, "was under the least obligation to follow these prices."

Judge Gary said the presidents of many railroads came to him to get prices, but the heads of the Pennsylvania and New York Central seemed to act as spokesmen for all the roads.

Robert Bacon, Former Morgan Partner, Testifies

Robert Bacon, ex-Secretary of State, ex-Ambassador to France and an ex-member of the firm of J. P. Morgan & Co., testified Saturday, June 14. He said that he was a member of the directory of the Illinois Steel Company and the Federal Steel Company and later a member of the finance committee of the United States Steel Corporation until 1905, when he resigned, but that he was reelected to the directorate again in 1912. He said he had participated in the organization of the Federal Steel Company and that the capitalization was about \$100,000,000, based on the actual values of the companies taken over.

The general purposes of that organization, he said, were to hold ore properties and control railroads for the transportation of the ore and to generally facilitate the manufacturing of steel and iron products. It was also the intention to build more finishing plants. The fact that the Carnegie properties were for sale he learned as early as 1890 or 1900 through an attempt of Henry C. Frick to sell the company.

Q. Did the question of the purchase of the Carnegie properties come before the board of directors of the Federal Steel Company?"

A. Yes, frequently I talked it over with Judge Gary and Mr. Morgan. Mr. Morgan was not convinced that it was a good thing for the Federal Steel Company to undertake. Later, after a dinner at the Waldorf, at which Charles M. Schwab made a speech, Mr. Morgan changed his mind and thought the Carnegie purchase would be a good thing.

THE IRON AGE

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A Marvel in Steel Production

An astonishing record in steel production in the United States is shown by the official statistics for 1912, which are published this week. The total of 31,251,-303 gross tons of steel ingots and castings is more than 7,500,000 tons greater than that of 1911 and more than 5,000,000 tons beyond the previous high record of 1910. In 1911, for the first time, this country made more steel than pig iron, the excess of the former being 26,157 tons. Last year steel ingots and castings exceeded pig iron by the remarkable margin of 1,524,-166 tons. In the years previous to 1911 the excess of pig iron had ranged from 1,200,000 tons in 1910 to 3,600,000 tons in 1900, as shown in the following comparison:

1900		Steel ingots and castings 10,188,329 20,023,947	Excess of pig iron 3,600,913 2,968,433
1910 1911 1912	27,303,567 23,649,344	26,094,919 23,675,501 31,251,303	1,208,648 °26,157 °1,524,166

[&]quot;Excess of steel.

The rapid growth of basic open-hearth steel output, with its large consumption of scrap, explains chiefly the striking way in which our steel production is forging ahead of pig-iron production. The fact is also to be considered that in 1911 and 1912 an inroad was made on stocks of steel-making pig iron in the hands of steel producers and merchant furnace companies.

It was thought last year, in view of the important increase in its export trade and the new records of output at its open-hearth plants, often bringing its total ingot production up to 60,000 tons a day, that the Steel Corporation's percentage of the country's steel production would show an appreciable increase over that of 1911. This is not the case. The comparison of ingot production, leaving out castings, is as follows in gross tons:

S	teel Corporation	Total	Steel Corporation percentage
1911		23,029,479	55.38 \$5.80

The increase thus appears to be less than one-half of one per cent.

The striking position of the United States in the world's steel production of 1912 may be gathered from the statement that this country turned out in that year approximately as much as the combined output of Germany, Great Britain, France, Belgium and Austria.

The Pittsburgh Ore Rate Decision

Last Friday's decision of the Interstate Commerce Commission in the case of the iron ore rate from Lake Erie to Pittsburgh did not directly order a reduction from 96 cents to 60 cents per ton, as some reports have suggested. The order was that the Pittsburgh rate should not be higher than the Wheeling rate, which is 60 cents. There is room, at least technically, for the railroads, between now and August 15, to undertake to raise the Wheeling rate. Such an advance might be suspended by the Commission, pending investigation, or might be allowed to go into effect, leaving it to shippers to bring a fresh case. The balance of probability remains, however, that the Pittsburgh rate will be considerably reduced, if it does not go all the way to 60 cents.

An interesting incident in the Commission's deci-

sion is that it does not find that the Pittsburgh rate complained of was due to sinister influence by the United States Steel Corporation, exerted by reason of the Steel Corporation's control of the Bessemer Railroad. Those familiar with the situation can readily recall that it was the highness of this rate that moved Andrew Carnegie to establish the Bessemer route for his ore. The ore rate, indeed, has come down since the route was established, and there is no doubt that the existence of the Bessemer road has helped to reduce it or hold it down. Other rates, for instance, the familiar Valley-Pittsburgh pig-iron rate, have meanwhile advanced. It may be interesting to note that, while the United States Steel Corporation does derive a profit from the Bessemer road, that profit is not large considering the investment, for the road's net revenue from operations has never reached \$4,000,000, and in the past five years has averaged only \$3,000,000, while from this revenue returns must be paid on some large investments. The Bessemer road, although owned by the Carnegie Steel Company, charges that company the full going rate, this arrangement having years ago replaced the original contract, based on 31/2 mills per net ton per mile. It is true a division of the rate is allowed the Union Railroad, but this is another story, and in its decision the Commisson mentions the fact that suitable action will be taken in due course upon the investigation it undertook of its own initiative some time ago into the allowances made the Union Railroad and other industrial roads controlled by blast furnaces in the Pittsburgh district.

Neither the fact that the haul to the Pittsburgh district from Lake Erie is about one-third less than to the Wheeling district nor the general question whether the Pittsburgh ore rate is high need be discussed. The real question is whether it has been a case of putting on all the traffic will bear, or of equalizing assembling costs in various districts. Years ago, at any rate, it could not be seriously questioned that the advantages of Pittsburgh were taxed by the railroads, and a voice from the early days is even now heard publicly, the editor of the Pittsburgh Dispatch saying in commenting on this decision: "It is within the personal knowledge of the writer that in the late seventies the Pennsylvania Company employed an expert to figure out how much of Pittsburgh's advantage in the cheapness of fuel the railroad could take in greater profits than charged to Cleveland and other points.'

The principle, of course, is now entirely discredited. and recently the Commission has killed the theory of equalizing assembling costs. This question of assembling costs is quite akin to that academic question of whether the chicken or the egg came first, Why should a district be preserved-why should either the plant or the railroad have been built-if economic conditions do not justify the location? Years ago many railroad managers had good reason to ask the question why the railroads committed to their care had been built, and there is excellent ground for the suspicion that the fundamental reason for equalizing conditions as to certain shippers was not to preserve those shippers for their own good, but to preserve them for the good of the railroad. It is comfortable to reflect that the density of traffic has so grown, and the demand for iron and steel has so grown, that the matter of equalizing assembling costs, whether to

preserve industrial operations or to force traffic over certain pieces of railroad track, is of vastly less importance than it once was. The Interstate Commerce Commission, therefore, will encounter much less difficulty in eliminating the principle from the rate structure of the country than would have been the case twenty, or even ten, years ago.

For several years the Gary plant of the Steel Corporation has been a suggestion in well-informed Pittsburgh quarters that Pittsburgh's supremacy as an iron-making district is threatened. In less well-informed Pittsburgh quarters the Gary plant has been viewed, not as a suggestion of what has been feared for Pittsburgh from the erection of similar plants, but as indicating its accomplishment. This misconception arose through lack of quantitative conception of the tonnage position of the one great plant Gary compared with the combined importance of the various large plants in the Pittsburgh district. It is clear, of course, that the competitive position of Pittsburgh is being improved.

The Mahoning and Shenango Valleys are also marked for a distinctly improved position. Some time ago the Connellsville coke rate to the Chicago district was advanced from \$2.35 to \$2.50, a rate which is now passed favorably upon by the Commission, while a reduction is ordered in the Valley rate from \$1.35 to \$1.20. In course of time the Valleys will doubtless obtain a reduced iron ore rate, their case being temporarily held up by the Commission, pending final settlement of the Pittsburgh rate, because technically the only decision thus far as to the Pittsburgh rate is that it shall not be higher than the Wheeling rate, and the Commission has not decreed that the Wheeling rate shall remain at 60 cents.

The Connecticut Compensation Act

The workmen's compensation act which recently became a law in Connecticut contains various advanced ideas, especially in regard to the right of an employer to conduct a compensation plan of his own and to insure himself, subject to the supervision of the state authorities; also the right of manufacturers to establish mutual liability insurance companies, though with some restrictions, which are stated below. The act carries the usual provisions that compensation shall not begin until two weeks following an accident; that the employer shall have the option between the act and employers' liability, with the old defenses eliminated; while where the employer has accepted the act and the employee refuses to do so, which is his right, the old defenses under employers' liability shall stand. Provision is made that the employer shall furnish medical and surgical care for the injured employee during 30 days immediately following the accident, a feature which has been the cause of some controversy in certain States. Apparently no better plan could be devised after long and intelligent study and investiga-

The right of an owner to operate a compensation system of his own constitutes a large improvement upon laws in operation in certain States, which have wiped out existing systems that may have been more favorable to the workmen and were preferred by the owners. The Connecticut law provides that "with the approval of the state insurance commissioner any employer who has accepted workmen's compensation

may enter into an agreement with his employees to provide a system of compensation, benefit and insurance in lieu of the compensation and insurance provided by the act. But no such substitute system shall be approved unless it confers benefits upon injured employees at least equivalent to the benefits provided by the act, nor shall any such substitute system be approved which contains an obligation of employees to join in it as a condition of employment, or which does not contain equitable provision for the withdrawal of employees from it and the distribution of its assets. If any such system requires contributions from employees it shall not be approved unless it confers benefits in addition to those provided under the act, at least commensurate with such contributions." Thus, it will be seen, the employee is completely safeguarded.

The other important feature of the act, that of employers' mutual insurance, will be received with favor by many owners. The mutual fire insurance companies have been eminently successful. By a stern insistence upon the removal of fire hazards and the introduction of fire protection the cost of insurance has been kept very low, and the beneficial influence upon shop conditions generally has been noteworthy. The compensation act provides that no association shall be formed to include employers not in the same or similar lines of trade or business, or in trades and businesses with substantially similar degrees of hazard to employees. "Each association shall have power, by appropriate by-laws, to provide for the admission, suspension, withdrawal and expulsion of members and to prescribe and enforce reasonable rules for safety regulations on the premises of its members; and for that purpose its inspectors shall leave free access to all such premises during regular working hours."

As has recently been pointed out in these columns, the supervision practiced by the fire mutuals should be duplicated in the liability companies of the same character, which would mean the constantly increasing use of safety devices in connection with machinery. The common belief is that the manufacturer would have the cost of these changes refunded to him in decreased insurance premiums.

Care in Addressing Correspondence

Apropos of the suggestion in The Iron Age of June 5 as to the desirability of promptness in replying to correspondence and of properly indicating on the envelope the department or individual to which a letter should be delivered, comes the request of a postmaster of a city of medium size that attention be called to the growing practice of addressing by name and city, without street or postoffice box number. In a great majority of cases those who have fallen into this habit are located in the larger centers. New York firms are frequent offenders. It is not realized, apparently, that the difficulty of locating persons is practically as great in many cases in communities of from 25,000 to 200,000 people, as in the largest cities. In some of the latter no effort is made by the postoffice authorities to find the addresses which are not plainly indicated. In no place is anything but first-class mail given this attention. Yet in one city of 150,000 people the entire time of two clerks is given to looking up addresses which have been omitted. In a great many cases letters are misfires, because they never reach those for whom they are intended.

The postmaster referred to has given this question careful personal investigation. He has found that a great deal of this class of mail bears the return address of concerns which are very well known and which presumably have complete organizations. In some instances mailing lists are defective, as shown by the large numbers of such letters received through the mails at the same time by one postoffice, indicating that they do not contain the routine correspondence of the house. In other cases individual letters which may be of importance are addressed merely as "John Doe, Providence, R. I." If the name is that of a wellknown man or business house, no detailed address is absolutely needed, but new clerks require time in order to become familiar with the personnel of their districts and delay may result. Investigation of the number of letters received back from the postoffice should be worth while to any business concern in showing whether carelessness prevails in the office.

Correspondence

Chilled Car Wheel Failures

To the Editor: The "Case of the Chilled Car Wheel" as set forth by the secretary of the Association of Chilled Wheel Makers in The Iron Age of May 8 is a good illustration of the kind of treatment that is often given to subjects of vital importance in this country. The principal object of such communications must be to gain time rather than to make progress in the subject under consideration.

No one conversant with the conditions which prevail in the manufacture and use of chilled wheels doubts that they can be made of very much better quality than those that are in use. The reports of many committees and associations published in the railroad and technical press prove this and give the things that are necessary to do to make good and safe wheels. But the reports of the Interstate Commerce Commission show that sufficiently good wheels are not being made and that wrecks and accidents caused by breakage of wheels and particularly wheel flanges lead all other causes of wrecks and accidents due to defects of equipment. In the last fiscal year (ending June 30, 1912) 984 wrecks were directly due to breakage of wheels and wheel flanges, which was nearly double the number due to failure of any other part of equipment and three times the number due to broken rails.

The accident bulletins of the Interstate Commerce Commission for the quarter ending September 30, 1912, and for the quarter ending December 31, 1912, state that 68 per cent. of all derailments in the first of these quarters were caused by defective equipment and tracks, and that 10 per cent. of the derailments were caused by broken rails, and 31 per cent. by broken wheels; that in the second quarter named 71 per cent. of all derailments were caused by defective equipment and tracks, of which 23.8 per cent. were due to broken rails and 26.5 per cent. to broken wheels.

The communication of the secretary of the Wheel Makers' Association, in discussing the digest of the report of the Interstate Commerce Commission published in *The Iron Age* of March 6 sets up the contention that the increase in wheel failures is due to the increase in number of cars in use. A simple calculation from the statistics given in your issue of March 6 will dispose of that argument.

Beginning with the record of 1902 as given, the total number of wrecks due to defective equipment in that year was 1609, of which 462 or 28.7 per cent. were caused by wheel breakage. In the next ten years the number of wrecks, also the number due to wheel breakage, steadily increased, the percentage ranging from 25 to 31. The total number of wrecks was 28,904, and the number due to broken wheels 8540, or 29.5 per cent.

After presenting a number of calculations about the years in which the wheels were made that broke in service, the communication continues: "Therefore we can assume that if we had a complete record, there would have been broken in the year 1910 approximately 60 wheels." record of the Interstate Commerce Commission distinctly shows the number of wheels broken that caused wrecks in 1910 to be 860.

The communication continues: "Because an occasional wheel breaks it does not follow that the wheel is to blame, because anything can be broken by abuse." Describing the leading cause of wrecks and accidents as "occasional" and, to make up an argument, reducing the number due to wheel breakage in 1910 from 860 down to 60 on the assumption that the Commerce Commission's record was not complete (!) is hardly a proceeding for the Wheel Makers' Association to be proud of or to do it any good.

ENGINEER.

Indian Pig Iron Not So Cheap as Claimed

Consul Edward J. Norton, Bombay, India, sends a statement to the Daily Consular and Trade Reports, taken from the Times of India, which corrects figures given by President Farrell in his recent testimony in the suit for the dissolution of the United States Steel Corporation. Mr. Farrell said that pig iron can be manufactured in India at \$5.47 a ton. One of the heads of the Tata Iron & Steel Company told a representative of the Times of India that he estimates that the cost of manufacture is not less than \$7 and generally ranges between that figure and \$8. He declared that no Indian pig iron had been sold in America under \$23 a ton and that it would be impossible to sell it were the quality not so much better than that of other pig iron. The sending of 600 tons to America, he said, was purely in the nature of an experiment and it cannot be said with certainty that the experiment has been successful.

Naylor & Co., Incorporated

Announcement is made of the incorporation of Naylor & Co., Inc., which will succeed to the organization and business of the firm of Naylor & Co., dealers in iron and steel and ores. The offices will be at 45 Wall street, as heretofore. The new company's directors are William H. Mills, formerly of Naylor & Co.; E. Alan Hay and Charles S. Ascherson, directors, and A. Douglas Tisdall, manager, of Naylor, Benzon & Co., Ltd., London; H. Edward Dreier, David Dows and Archie H. Strong, heretofore of Naylor & Co. The officers are the following: William H. Mills, president; H. Edward Dreier, first vicepresident; David Dows, second vice-president; Archie H. Strong, assistant to the president, and Robert F. Erts,

The Knox Pressed & Welded Steel Company, Farmers' Bank Building, Pittsburgh, whose plant at Niles, Ohio, was destroyed by fire early in May, has purchased the plant of the Sharon Boiler Works at Sharon, Pa., and will operate it after necessary repairs and alterations are made. The company will continue the manufacture of the Knox patented water-cooled ports, doors, frames and bulkhead coolers; the Neeland patented water-cooled buckstay and a general line of welded and riveted plate work, including annealing boxes, galvanizing pots and welded tanks of all description. The Knox devices are now in use in 51 plants in the United States. W. H. Schoen is president; L. L. Knox, vice-president; L. S. Schmidt, vice-president; G. W. Gerwig, secretary; R. T. McCormick, sales manager; I. F. Lehman, treasurer and general manager.

The Steel Company of Canada, Hamilton, has assumed the agreement made between the Superior Rolling Mills Company and the city of Fort William, Ontario, and the preliminary work at the latter place on docks and buildings is now being proceeded with,

The Heath Foundry & Mfg. Company, Plymouth, Ohio, has changed its name to the Root-Heath Company.

Mining Engineers' October Iron and Steel Meeting

The board of directors of the American Institute of Mining Engineers has authorized the holding of a meeting under the auspices of the Iron and Steel Committee in New York City, October 16 and 17. The following papers have thus far been assured:

Henry M. Howe. "Discussion of the Existing Data as to the Position of Aca

Henry M. Howe. "Equilibrium Temperature for A1 in Carbon

Henry M. Howe. "The Divorcing of the Eutectoid in Meteor-

Henry M. Howe and A. G. Levy, "Determination of the Position of Ae_a in Carbon-Iron Alloys."

J. W. S. Crowe and H. S. Rawdon. "Thermal and Microscopi-

cal Examinations of Professor Howe's Standard Steels."
J. H. Hall. "Shock Tests of Cast Steel."

H. F. Miller, Ir. Title not yet decided.

E. Stutz. "The Scoria Proces Albert Sauveur. "Mayari Steel." Felix A. Vogel. "Briquetting."

J. E. Johnson, Jr, "Cast Iron." R. R. Abbott. "Influence of Alloying Elements on the Car-"Cast Iron." burizations of Steel."

As far as possible these papers will be published in the Bulletin of the Institute before the October meeting and will also be mailed in pamphlet form to any member requesting it as well as to all persons designated by the authors.

The committee has good reason to expect additional papers by several steel manufacturers. Members intend-ing to present papers should notify the secretary as early as possible, giving the title of the paper and the probable date at which the manucsript may be expected. It is essential that the manuscripts be received at the latest by September 1 and preferably by August 1 in order that the papers may be printed and distributed before the meeting. H. M. Boylston, Abbot Building, Harvard Square, Cambridge, Mass., is secretary of the committee.

Metal Schedule Tariff Reductions

WASHINGTON, D. C., June 17.-The Democratic members of the Finance Committee have practically completed and will submit to a caucus this week the Underwood-Simmons tariff bill. The majority amended the Underwood bill by placing on the free list pig iron, ferromanganese, steel ingots, steel billets, slabs, and blooms, and made reductions averaging to per cent on structural iron and steel. An effort was made to put aluminum and its products on the free list, but it was finally decided to change the Underwood bill so as to provide a revenue duty and it is likely that specific rates will be substituted for ad valorem and that the duties will be reduced on an average 10 per cent.

The consideration by the Democratic caucus will last until about the first week in July, and after it has approved the bill it will be reported to the Senate. Republican members of the Finance Committee will not be furnished with the text of the completed Underwood-Simmons bill until it is made public. It is estimated that the debate in the Senate will last for about six weeks, or until the middle of August. After passing the Senate the bill will go to conference and as the conference may be a prolonged one it is possible that the measure may not be finally approved by the President before the middle of September.. w. L. C.

The legal difficulties which have checked the iron and steel industry in New South Wales have been settled. The Eskbank Iron & Steel Works is now completing its second blast furnace, a coal shaft has been put down and more coke ovens have been built. The iron ore deposits at Tollawang and Carcoar are being developed. The rail mills have been working well and everything is declared to be in good condition for expansion.

From Brussels the report comes that the Société de l'Air Liquide and the Société Metallurgique d'Ougrée Marihave have formed a combination, the object of which is to develop the use of liquid air in connection with blast furnace operation. The new company is to be known as La Société d'Etudes et d'Entreprises Metallurgique.

The Iron and Metal Markets

Lower Coke and Ore Rates

Reduction of Central Western Costs

Weakness in Lighter Finished Products—The Possibility of Billet Imports

The Commerce Commission's decisions on coke and ore rates have been widely discussed among iron and steel manufacturers, particularly in their bearing on competition between districts. While the new Pittsburgh ore rate is not known, these decisions, in connection with what has been laid down by the commission from time to time, are taken as pointing to lower rates on ore as well as coke to districts nearest the sources of supply of both, counting lower lake docks as supply points for ore.

Manufacturers in the Pittsburgh district and the Mahoning and Shenango Valleys count on the strengthening of their competitive position as against Chicago, as well as certain districts in Ohio and Pennsylvania whose assembling costs have long been modified by the rate-making methods of the railroads.

The tendencies evident in finished material markets for some weeks are becoming rather better defined. The chief divergence in views of the outcome is over the prediction by some in the trade of a considerable buying movement when the tariff bill passes if large crops are assured. On the other hand is the belief that large forward buying when it comes again will only be at considerably lower prices, and that meanwhile consumers will not buy far ahead of their requirements.

Pittsburgh reports that bookings of plates, structural shapes, bars and pipes were better in the first half of June than up to the middle of May, but that specifications are running only about 60 per cent. of output. On lighter products specifications are falling off and unless there is an improvement a slowing down in production of sheets, tin plate and wire is to be looked for.

In the Chicago district a new plate mill to be started in July, together with several new open-hearth furnaces, means better deliveries in an important product. The limitation of Eastern plate mills to their usual territory is not far away, in view of this development and the shortening of delivery periods by some Central Western wills.

In spite of the amount of structural work in sight, important general contractors in the East have been reducing forces, and the complaints of low fabricating and erecting prices are more pronounced. The week's contracts include the Panama-Pacific Exposition auditorium, 3275 tons, and the May Company building, Cleveland, 8000 to 9000 tons.

Prices on bolts and rivets have shown irregularities for some weeks. On the latter the \$2.10 Pittsburgh basis for structural rivets and \$2.20 for boiler rivets, or \$2 a ton less than the ostensible market, has become more general.

More is heard of close competition for sheet orders. More commonly black sheets are sold at 2.25c. for No. 28, and galvanized at less than 3.35c. Sheet and tin plate wage scales are likely to be settled this week. The chances for advances have grown less as the market has declined; there is also the definite decision of one company to operate an open mill.

The Senate committee's action in putting semifinished steel on the free list is announced just as Belgian and French steel companies are making fresh cuts in billets for export to England. At 80 shillings, Antwerp, for 4 x 4-in. billets, as quoted this week, free trade in billets would mean a considerable reduction from \$28, Philadelphia, which has prevailed lately.

In the pig iron market the condition is still one in which the volume of inquiry far exceeds that of sales. Consumers of foundry iron, it now appears, will make their purchases for second quarter last some time beyond July 1. On Southern iron \$10.75 for No. 2 has been quoted more than once, and Northern iron has declined in Ohio and Chicago markets. In the East there are negotiations for several large lots, but buyers are in no haste.

Sales of 3000 to 4000 tons of Bessemer iron are reported at \$16 Valley furnace and slightly lower. In basic iron there is little interest in the Central West. At Cincinnati an 8000-ton inquiry has come up. In eastern Pennsylvania a \$15.75 quotation has been made after some weeks of a nominally \$16 market.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italies

At date, one week, one month, and one year previous.

Tune 18 Tune 11, May 21 Tune 19

	June 18,]	une 11.	May 21,	June 19,
Pig Iron, Per Gross Ton: Foundry No. 2, X, Philadelphia. Foundry No. 2 Valley furnace. Foundry No. 2 S'th'n, Cin'ti Foundry No. 2, Birmingham, Ala. Foundry No. 2, furnace, Chicago Basic, delivered, eastern Pasic, Valley furnace. Bessemer, Pittsburgh Malleable Bessemer, Chicago Gray forge, Pittsburgh. Lake Superior charcoal, Chicago	14.00 14.00 10.75 15.50 15.75 14.50 16.90 15.50 14.65	1913. \$16.25 14.00 14.25 11.00 16.00 14.50 17.25 16.00 14.65 16.75	1913. \$16.75 14.50 14.75 11.50 16.00 16.50 17.50 16.00 17.50 18.00	1912. 13.25 13.25 14.25 11.00 14.50 15.25 13.25 15.15 14.50 13.90 16.25
Billets, etc., Per Gross Ton:				
Bessemer billets, Pittsburgh Open hearth billets, Pittsburgh Open hearth sheet bars Forging billets, Pittsburgh Open hearth billets, Philadelphia Wire rods, Pittsburgh	26.50 26.50 27.00 34.00 28.00 29.00	26.50 26.50 27.00 34.00 28.00 30.00	27.00 27.00 27.00 34.00 28.00 30.00	20.50 20.50 21.50 28.00 23.40 25.00
Old Material, Per Gross Ton:				
Iron rails, Chicago Iron rails, Philadelphia Carwheels, Chicago Carwheels, Philadelphia Heavy steel scrap, Pittsburgh Heavy steel scrap, Chicago Heavy steel scrap, Philadelphia.	14.00 17.50 13.50 13.00 12.50 10.75 11.50	15.25 17.50 13.50 13.00 12.50 10.00 12.00	15.75 18.00 14.25 13.50 13.50 10.75 12.00	16.00 16.50 14.00 13.50 13.50 11.75 13.50
Finished Iron and Steel,				
Per Pound to Large Buyers: Bessemer rails, heavy, at mill. Iron bars, Philadelphia Iron bars, Chicago Steel bars, Pittsburgh Steel bars, New York Tank plates, Pittsburgh Tank plates, New York Reams, Pittsburgh Beams, New York Angles, Pittsburgh Angles, New York Skelp, grooved steel, Pittsburgh Skelp, sheared steel, Pittsburgh	1.45	Cents. 1.25 1.57 ½ 1.65 1.50 1.40 1.56 1.45 1.61 1.45 1.61 1.45 1.61 1.45 1.61 1.45	Cents. 1.25 1.57 /2 1.70 1.57 /2 1.40 1.56 1.45 1.61 1.45 1.61 1.45 1.61 1.45	Cents. 1.25 1.30 1.25 1.27 ½ 1.20 1.36 1.25 1.41 1.25 1.41 1.25 1.41 1.25 1.41 1.20 1.25
Sheets, Nails and Wire.				
Per Pound to Large Buyers: Sheets, black, No. 28, Pittsburgh Wire nails, Pittsburgh Cut nails, f.o.b. Eastern mills Cut nails, Pittsburgh Fence wire, ann'l'd, 0 to 9, Pgh. Barb wire, galv Pittsburgh	1.70	Cents. 2.30 1.80 1.80 1.70 1.60 2.20	Cents. 2.30 1.80 1.80 1.70 1.60 2.20	Cents. 1.90 1.60 1.60 1.55 1.40 1.90

The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Coke, Connellsville. Per Net	Ton, at C	ven:			
4. 44.	June 18,	June 11,			b
Furnace coke, prompt shipmen Furnace coke, future delivery. Foundry coke, prompt shipmen Foundry coke, future delivery.	2.25	1913. \$2.15 2.25 2.85 3.00	1913. \$2.15 2.25 2.75 3.00	1912. \$2.00 2.35 2.40 2.50	
Metals,		0.00	0.00	2.50	
Per Pound to Large Buyers:	Cents.	Cents.	Cents.	Cents	

roundry come, future delivery	3.00	3.00	3.00	2.50
Metals,				
Per Pound to Large Buyers: Lake copper, New York. Electrolytic copper, New York. Spelter, St. Louis. Spelter, New York. Lead, St. Louis. Lead, New York. Lin, New York. Antimony, Hallett, New York. Tin plate, 100-lb. box, Pittsburgh	Cents. 15.50 14.87 1/4 4.95 5.10 4.20 4.35 44.75 8.15 \$3.60	Cents. 15.75 15.25 5.00 5.15 4.20 4.35 45.00 8.20 \$3.60	Cents. 16.00 15.75 5.30 5.45 4.20 4.35 48.25 8.25 \$3.60	Cents. 17.62½ 17.50 6.90 7.65 4.37½ 4.50 48.50 7.75 \$3.40

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Louis, 22½c.; Kansas City, 42½c.; Omaha, 42½c.; St. Paul, 32c.; Denver, 84½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.45c. to 1.50c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with ex-

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ½ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered ½-in. plates. Plates over 72 in. wide must be ordered ½ in. thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft., down to the weight of 3-16 in., take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents	Der	lh.
Gauges under 1/4 in. to and including 3-16 in		.10	
Gauges under 3-16 in. to and including No. 2		.15	
Gauges under No. 8 to and including No. 9		.25	
Gauges under No. 9 to and including No. 10		.30	
Gauges under No. 10 to and including No. 12		.40	
Sketches (including straight taper plates) 3 ft. and	OWEE	.10	
Complete circles, 3 ft. in diameter and over	0161	.20	
Boiler and flange steel		.10	
"A. B. M. A." and ordinary firebox steel		.20	
Still bottom steel		.30	
Marine steel		.40	
Locomotive firebox steel		.50	
Widths over 100 in. up to 110 in., inclusive		.05	
Widths over 110 in. up to 115 in., inclusive		.10	
Widths over 115 in. up to 120 in., inclusive		.15	
Widths over 120 in. up to 125 in., inclusive		.25	
Widths over 125 in. up to 130 in., inclusive		.50	
Widths over 130 in.			
Cutting to lengths, under 3 ft., to 2 ft. inclusive		.25	
Cutting to lengths, under 2 ft., to 1 ft. inclusive	3		
Cutting to lengths, under 1 ft			
NO charge for cutting rectaingular plates to tengths	3 KE 20	SUL UN	VAC E.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, 1/4 in. thick and over, and zees, 3 in. and over, 1.45c. to 1.50c. Extras on other shapes and sizes are as follows:

		per	16.
I-beams over 15 in		.10	
H-beams over 18 in			
Angles over 6 in. on one or both legs		.10	
as per steel bar card, Sept. 1, 1909		.70	
Tees, structural sizes (except elevator, hand rail, ca			
truck and conductor rail)		.05	
Angles, channels and tees, under 3 in. wide as p	er		
steel bar card, Sept. 1, 1909		.80	
Deck beams and bulb angles		.30	
Hand rail tees		.75	
Cutting to lengths, under 3 ft., to 2 ft. inclusive		.25	
Cutting to lengths, under 2 ft., to 1 ft. inclusive		.50	
Cutting to lengths, under 1 ft	1	.55	
No charge for cutting to lengths 3 ft. and over.			

Wire Rods and Wire.—Bessemer, open-hearth and chain rods, \$29. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers, annealed, \$1.60; galvanized, \$2. Galvanized barb wire, to jobbers, \$2.20; painted, \$1.80. Wire rolls to jobbers, \$7.80.

nails, to jobbers, \$1.80.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

		Plain	Wire.	per 10	10 lb.			
Nos. Annealed	0 to 9	10	11 1	2 8 125	6 13	14	15	16
Galvanized	2.15	2.20	2.25	2.30	2.40	2.50	2.90	3.00

Wrought Pipe.—The following are the jobbers' car-load discounts on the Pittsburgh basing card on steel

pipe (full weight) in effect from May 27, 1913, iron pipe (full weight), from June 2, 1913:

(Butt	Weld.	
Inches. Steel. 16, 14 and 16, 72 14 76 14 to 3, 79	Galv. 511/6 651/4 701/6	Inches. Black. 36 and 4	Galv. 47 46 56 61
	Lap	Weld.	
2	67 1/4 69 1/4 64 1/4	114	45 56 58 61 61 55
Rac	amed a	nd Drifted.	
1 to 3, butt 77 2, lap 74 2½ to 4, lap 76	68 1/2 65 1/2 67 1/3	1 to 1½, butt	59 60 43 54 56 59
Butt Weld	estra	strong, plain ends.	
18, 14 and 16 67 12 72 14 to 1½ 76 2 to 3 77	561/3 651/3 691/3 701/3	34 to 134	52 60 62 63
Lap Weld	, extra	strong, plain ends.	
2 73 2½ to 4. 75 4½ to 6. 74 7 to 8. 67 9 to 12. 62	64 1/2 66 1/2 65 1/2 56 1/2	1½ 65 2 66 2½ to 4 70 4½ to 6 69 7 and 8 63 9 to 12 58	59 58 61 60 53 47
Butt Weld, do	suble es	tra strong, plain ends.	
½	55 1/3 58 1/3 60 1/3	1 1/2	49 52 54
Lap Weld, do	uble ex	tra strong, plain ends.	
2	56 1/3 58 1/3 57 1/3 46 1/3	2	49 54 53 42
The above discounts as	e subje	ct to the usual variation in	weight

of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts to jobbers, in carloads on lap-welded steel, in effect from May 29, 1913, and standard charcoal-iron boiler tubes, in effect from January 1, 1913, are as follows:

Lap-Welded Steel.	Standard Charcoal Iron.
13/4 and 2 in 60	
2¼ in 57	
23/2 and 23/4 in 63	21/4 in
3 and 31/4 in 67	21/2 to 21/4 in
3½ to 4½ in	3 and 31/4 in
5 and 6 in	31/2 to 41/2 in
7 to 13 in	Locomotive and steamship ap

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¼ in. and larger, over 22 ft., 10 per cent. net extra.
Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

Sheets.-Makers' prices for mill shipments on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f.o.b. Pittsburgh, terms 30 days net or 2 per cent. cash discount in 10 days from late of invoices.

te of invoice:	
Blue Annealed Sheets.	
Nos. 3 to 8	
Box Annealed Sheets, Cold Rolled.	
Nos. 10 and 11 1.90 to 2.00 No. 12 1.90 to 2.00 Nos. 13 and 14 1.95 to 2.05 Nos. 15 and 16 2.00 to 2.10 Nos. 17 to 21 2.05 to 2.15 Nos. 22 and 24 2.10 to 2.20 Nos. 25 and 26 2.15 to 2.25 No. 27 2.20 to 2.30 No. 28 2.25 to 2.35 No. 29 2.30 to 2.40 No. 30 2.40 to 2.50	
Galvanized Sheets of Black Sheet Gauge.	
Nos. 10 and 11 2.35 to 2.50 No. 12 2.45 to 2.60 Nos. 13 and 14 2.45 to 2.60 Nos. 15 and 16 2.60 to 2.75 Nos. 17 to 21 2.75 to 2.90 Nos. 22 and 24 2.90 to 3.05 Nos. 25 and 26 3.05 to 3.20 No. 27 3.20 to 3.35 No. 28 2.35 to 3.50 No. 29 3.50 to 3.65 No. 30 3.55 to 3.80	

Pittsburgh

PITTSBURGH, PA., June 17, 1913.

Bookings on new orders so far in June on the heavier materials, such as plates, shapes, bars and pipe, are larger than in the first half of May, but, on the other hand, specifications against contracts are running only from 60 to 65 per cent. of output. As one leading steel maker puts it, the new buying that is being done represents actual consumption, neither the jobber nor the consumer placing orders for any material that he the consumer placing orders for any material that he does not actually need. Specifications against contracts in tin plate, sheets and wire products continue light, and, unless they soon improve, there will have to be a slowing down in operations in the near future. The Carnegie Steel Company reports that the pressure upon it for deliveries is as hard as at any time in the past six months, and it has practically nothing more to sell for delivery before October. The settlement of the puddling scale indicates that the bar iron mills will keep in operation, aside from possible short shut will keep in operation, aside from possible short shut will keep in operation, aside from possible short shut downs in July to make needed repairs. It is probable a settlement of the sheet and tin plate scale will also be reached this week. Any efforts of the Amalgamated Association to obtain higher wage rates for the tin plate mills that sign the scale would be useless, in view of the fact that the Phillips Sheet & Tin Plate Company has made its Pope mill at Steubenville non-union from July 1. This leaves few tin plate concerns that sign the Amalgamated scale, and they certainly cannot sign the Amalgamated scale, and they certainly cannot afford to pay any higher wages than are paid in the open mills. There is a strong feeling in the trade that before the steel mills have worked off the actual orders now on their books tariff legislation will be out of the way, the crop situation will have been assured and, way, the crop situation will have been assured and, with money fairly plentiful, a good buying movement is looked for later in the year. Some further weakness has developed in sheets and also in wire products. Coke is reasonably strong, with the operators holding out for higher prices for last-half furnace coke than the furnaces are willing to past. the furnaces are willing to pay.

Pig Iron.—The local market is extremely dull. The large consumers of basic and Bessemer pig iron seem to be well covered for some time ahead. While some inquiry is looked for in basic before long, this will come from the smaller consumers who have for some time been buying only for immediate wants. The foundries are placing orders only for fair sized lots of foundry iron for June and July shipment. and none of them seem desirous of buying ahead. We note sales of 3000 to 4000 tons of standard Bessemer for delivery in next three months at \$16, Valley, or slightly less, and 500 tons of basic for June delivery at about \$14.50 at maker's furnace or slightly under. We quote Bessemer iron at \$16 to \$16.25; basic, \$14.50; malleable Bessemer, \$14.25 (\$14.50; No. 2 foundry, \$14 to \$14.25, and gray forge, \$13.75 to \$14, all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton. \$13.75 to \$14, all at Valley luthace, the Pittsburgh district being 90c. a ton.

Billets and Sheet Bars .- It is reported that one of Billets and Sheet Bars.—It is reported that one of the Steel Corporation interests has bought 6000 tons of open-hearth billets to make up shortages in supply at several of its works. The steel market continues dull. An Ohio mill bought last week about 500 tons of sheet bars at the reported price of \$27.50 delivered at buyer's works. We quote Bessemer and open-hearth billets for prompt and third-quarter delivery at \$26.50 to \$27 and Bessemer and open-hearth sheet bars for same deliveries at \$27 to \$27.50, maker's mill, Pittsburgh or Youngstown. We quote forging billets at \$34 to \$35 and axle billets at \$32 to \$33, Pittsburgh.

Ferroallovs.—Inquiry for ferromanganese is con-

Ferroalloys .- Inquiry for ferromanganese is confined entirely to small lots for reasonably prompt shipfined entirely to small lots for reasonably prompt ship-ment. Importers are still quoting \$61, seaboard, on 80 per cent. ferromanganese for second half delivery but on carloads and up to 100 tons sales have been made at \$59 to \$59.50, Baltimore. We quote 80 per cent. English ferromanganese at \$60 to \$60.50, Baltimore, the freight rate to the Pittsburgh district being \$2.16 per ton. We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at \$75; over 100 tons to 600 tons, \$74; over 600 tons, \$73. Pittsburgh.

Wire Rods .- Sales of three or four carloads of both Bessemer and open hearth rods have been made for prompt delivery at \$29 to \$30, maker's mill. We quote Bessemer, open hearth and chain rods at \$29, Pittsburgh.

-Several good sized lots of muck bar Muck Bar .have been sold at \$31 and \$31.50, delivered at buyer's mill in the Pittsburgh district. With the settlement of the Amalgamated Association puddling scale at West Baden, Ind., June 14, there will be no shut down of the puddling mills. We note a sale of 500 tons of

strictly high grade bar, made from all pig iron, at

strictly high grade bar, made from all pig iron, at \$31, delivered at buyer's mill.

Skelp.—The new demand is fairly active especially on grooved and sheared iron skelp. The mills have their output sold up for the next several months. We quote: Grooved steel skelp, 1.45c. to 1.50c.; sheared steel skelp, 1.50c. to 1.55c.; grooved iron skelp, 1.70c. to 1.75c.; sheared iron skelp, 1.80c. to 1.85c.; all delivered to buyers' mills in the Pittsburgh district.

Steel Rails.—The Carnegie Steel Company has taken an order for 1000 tons of standard sections from the Lehigh Valley for quick delivery, and reports specifications against contracts as active, and new inquiry for small lots running up to 500 and 1000 tons as fairly good. Some important negotiations for light

as fairly good. Some important negotiations for light rails are under way. On light rails, the Carnegie Com-pany is sold up for from two months to ten weeks, and on standard sections to about September on standard sections to about September 1. Spines bars are in active demand and sales of steel ties by the Carpegia Company are increasing. The United States bars are in active demand and sales of steel ties by the Carnegie Company are increasing. The United States Steel Products Company has received an order for 11,000 tons of steel rails from Buenos Ayres and another for 5800 tons from Uruguay, and both contracts will be filled from the rail mills of the Carnegie Company at Bessemer, Pa. We quote splice bars at 1.50c. per lb. and standard section rails at 1.25c. per lb. Light rails are quoted as follows: 25, 30, 35, 40 and 45 lb. sections, 1.25c.; 16 and 20 lb., 1.30c.; 12 and 14 lb., 1.35c., and 8 and 10 lb., 1.40c., all in carload lots, f.o.b. Pittsand 8 and 10 lb., 1.40c., all in carload lots, f.o.b. Pitts-

burgh.

Plates.—Orders for cars placed the past week were light. The Chesapeake & Ohio, which recently bought 1000 cars, has an inquiry out for 1000 more, and the Grand Rapids & Indiana has received bids on 85 flat cars and 60 gondolas. Bids on the two submarine the Government are to be recars and 60 gondolas. Bids on the two submarine tenders to be built by the Government are to be readvertised, to be opened again on June 26. These will require from 8000 to 9000 tons of plates and shapes. Leading plate mills are quite well sold up for the next for to go days, but some of the smaller mills that have oo to 90 days, but some of the smaller mills, that have not booked heavily, will take orders for delivery in two to three weeks. We quote ¼-in, and heavier tank plate at 1.50c. to 1.60c. and for forward delivery 1.45c., maker's mill, Pittsburgh.

Structural Material.—Inquiry is fairly heavy. Structural Material.—Inquiry is fairly heavy. The Jones & Laughiin Steel Company has taken a steel storage warehouse for the Hornell Ice & Cold Storage Company, Hornell, N. Y., 200 tons, and a building for St. Mary's Lyceum in Pittsburgh, 100 tons. Bids are expected to be asked in the near future on the steel for the William Penn Hotel to be built on Smithfield street in this city, 8000 to 10,000 tons, and also on the Hostetter office building, to be built on Grant street in this city. 4000 to 5000 tons. Local fabricators report they are well filled for 90 days to four months, but complain that well filled for 90 days to four months, but complain that low prices are being made on fabricated work which leave little margin of profit. We quote beams and channels up to 15 in. at 1.45c. to 1.50c. Small lots from warehouse for prompt delivery are bringing from 1.60c. up, depending on the size of the order and the deliveries wanted.

Iron and Steel Bars.—A leading mill reports that new orders for steel bars have been considerably better and that specifications have been heavier so far in June than in the same time in May. The Carnegie, Jones & Laughlin and Republic companies are well sold up on Laughlin and Republic companies are well sold up on steel bars for some months, and the pressure from customers for deliveries is as strong as ever. The new demand for iron bars has quieted down somewhat and specifications are falling off in volume. Makers of steel bars for reinforcing purposes report a continued heavy demand, one mill stating it is sold up to November. For forward delivery steel bars are firm at 1.40c. at mill, but for shipment in three to four weeks prices from warehouse and other sources of supply are slightly lower than they have been. We quote iron bars at 1.65c. to er than they have been. We quote iron bars at 1.65c. to 1.70c. for delivery in six to eight weks. The mills continue to charge \$1 extra per ton for twisting ¾-in. and larger steel bars and \$2 extra for ½ to 5% in.

Sheets.-There is further weakness in black and galvanized sheets, particularly in the latter. Several of the larger mills are now offering No. 28 Bessemer black sheets at 2.25c. and No. 28 galvanized at 3.35c. or lower. Within a month or a little more prices of 3.35c. or lower. Within a month or a little more prices of spelter have declined from 7c. to 5c. per lb., or about \$40 a ton. It is stated that on No. 26 sheets this represents a lower cost for galvanizing of about \$5 a ton, so that the decline in prices of galvanized sheets is partly explained. Statements that 3.25c. have become quite common on No. 28 galvanized are strongly denied, and it is claimed this price has been made in only a few excep-tional cases. The new demand for both black and gal-vanized sheets is only fair, but a heavy tonnage is under

negotiation. Large consumers that have been in the negotiation. Large consumers that have been in the market some time have kept putting off their purchases, waiting until better assured that prices will not go lower. One inquiry for 15,000 tons of black and galvanized sheets has been out for more than a month. This week the American Sheet & Tin Plate Company is operating to 79 per cent. of its hot sheet mill capacity, but some of the other large makers are running full. We quote No. 10 blue annealed sheets at 1.75c.; No. 28 Bessemer black sheets, 2.25c. to 2.35c.; No. 28 galvanized at 3.35c. to 3.50c., and No. 28 tin mill black plate at 2.30c. These prices are f.o.b. Pittsburgh, in carload and larger lots, jobbers charging the usual advances for small lots from store. from store.

Tin Plate.—Two leading makers report a slight increase in specifications and believe that the improvement in this direction will continue. The leading maker is reported to have actual specifications on its books covering its entire output of tin plate for the next three or four months, but others state that specifications have been dull for some time and unless they soon improve there will be a restriction in operations in some of the tin plate mills in July and August. The American Sheet & Tin Plate Company is still running short of steel and this week is operating only to 86 per cent, of its hot tin mill capacity. Reports were current last its hot tin mill capacity. Reports were current last week of a reduction of 10c. a box in prices of tin plate, but this was incorrect. Prices are only fairly strong, but there is not enough new buying to test the market. We quote 100-lb. cokes at \$3.60; 100-lb. ternes at \$3.45, and No. 28 black plate for tinning purposes at \$2.30, all f.o.b. Pittsburgh.

Bolts and Rivets.-The new demand is reported only fair, and consumers who some time ago placed heavy contracts have cut down the tonnage on some of these orders and are not specifying very freely against the balance. Local makers report they are against the balance. Local makers report they are pretty well sold up for the next month or more but that new business is coming in quite slowly. Prices on bolts and rivets continue to be shaded. Regular prices on button head structural rivets are \$2.20 and on cone head boiler rivets \$2.30. Regular discounts on bolts are as follows, in lots of 300 lb. or over delivered within a 20c. freight radius of maker's works:

Coach and lag screws
Rivets, tin plated, bulk

Railroad Spikes.—Specifications from the railroads for some time have been light and new demand is dull. The mills have pretty well caught up on back orders and prompt deliveries of railroad and boat spikes can now be had without much trouble. We quote railroad spikes in base sizes, 5½ x 9/16 in., at \$1.75 to \$1.80, and small railroad and boat spikes in carload and larger lots at \$1.80 to \$1.85 per 100 lb., f.o.b. Pittsburgh.

Hoops and Bands.—The new demand is only for small lots but mills report that specifications against contracts are coming in freely. One leading maker reports its entire output sold up to October. We quote hoops at 1.60c. and bands at 1.40c. f.o.b. Pittsburgh with extras on the latter as per the steel bar card

Shafting.—There is no improvement in the demand and prices continue weak. We quote cold rolled shafting at 60 per cent off in carloads and larger lots and 55 per cent off in small lots delivered in base territory. On a very desirable specification it is probable that the quotation of 60 off could be shaded one or two points.

Merchant Pipe.-Orders booked so far this month merchant Pipe.—Orders booked so far this month by the pipe mills are considerably heavier than in the same period in May. In point of new demand, pipe is one of the most active items on the whole list of finished material. Buying in gas and oil lines for this season is pretty well over, but the mills that make large pipe report their works filled to capacity for the

next three or four months. The new discounts on iron and steel pipe recently adopted are not being firmly held, some unevenness developing in the last week or

Boiler Tubes.—The demand continues heavy and mills making steel and iron boiler tubes report they are filled up to October or later. This year promises to be a record breaker in output and shipments of boiler tubes, the demand over all of this year having been enormously heavy. This is also true of seamless steel tubing, two of the leading makers stating that practically their entire output is sold up for the remainder of this year. It is stated that regular discounts on iron and steel boiler tubes are quite firm.

Old Material.—Upon the suggestion of several

Old Material.—Upon the suggestion of several leading dealers in scrap and also two of the largest consumers, we have decided to make a differential in prices between what is known in the trade as selected heavy steel scrap, consisting of bloom and billet ends, plate shearings, etc., and ordinary steel scrap, such as is shipped in by dealers from their yards and which embraces several kinds of material that would not be accepted by leading consumers for open hearth purposes. The higher grade is designated by the term "selected heavy steel scrap" which always brings 50c. to \$1 a ton advance over ordinary steel scrap. The scrap market does not show any betterment, but on the contrary several grades have declined to the lowest prices ever known, among these being turnings and bundled sheet scrap. Leading consumers are not buying and there is still an embargo on scrap routed for the Jones & Laughlin Steel Company. Dealers are not trying to force sales under present conditions. We quote as follows, per gross ton, for delivery in the Pittsburgh and nearby districts:

Selected heavy steel scrap, Steuben- Follansbee, Brackenridge, Sharon, Mo	ones-		
sen and Pittsburgh delivery	3	13.60 to	\$13.50
Ordinary steel scrap		12.50 to	12.75
No. I foundry cast			
No. 1 foundry cast		11 50 40	11.75
No. 2 foundry cast		11.30 10	11.73
Bundled sheet scrap, f.o.b. consumers' i	mills,		
Pittsburgh district		8.50 to	8.75
Rerolling rails, Newark and Cambridge, (Thio,		
Cumberland, Md., and Franklin, Pa.,		14.50 to	14.75
No. 1 railroad malleable stock			11.75
Grate bars		8.75 to	9.00
Low phosphorus melting stock	44.11	15.50 to	15.75
Iron car axles		24.50 to	25.00
Steel car axles		17.50 to	17.75
Locomotive axles, steel			21.50
Locomotive axles, iron		25.50 to	26.00
			12.25
No. 1 busheling scrap		7.50 60	7.75
No. 2 busheling scrap		7.50 to	
Old carwheels		14.00 to	14.25
*Machine shop turnings		6.50 to	6.75
*Cast-iron borings		8.25 to	8.50
†Sheet bar crop ends		14.00 to	14.25
Old iron rails			14.75
No. 1 railroad wrought scrap			
Heavy steel axle turnings		9.00 to	
Stove plate		8.50 to	8.75

"These prices are f.o.b. cars at consumers' mills in the Pitts-burgh district, †Shipping point.

Coke.—The Wisconsin Steel Company has been in the market for 13,000 tons a month and the Inland Steel Company for 15,000 tons a month, but it is understood that both have decided not to close for the present, but may buy from month to month until conditions are more settled. The demand for prompt shipment is only fair, but the market is firm. A number of leading coke makers feel they should get \$2.50 for their coke coke makers feel they should get \$2.50 for their coke for last half of the year, and are not inclined to shade that price. There is a fair demand for foundry coke for prompt shipment and for last half and the market is firm. We quote standard makes of Connellsville furnace coke for prompt delivery at \$2.15 to \$2.25 per net ton at oven, and on contracts for last half of the year from \$2.25 to \$2.50. We quote 72-hr. foundry coke at \$2.65 to \$2.85 for prompt shipment and from \$2.85 to \$3 per net ton at oven for delivery over second half. The Connellsville Courier reports the output of coke in the Upper and Lower Connellsville regions last week at 400,015 tons, an increase over the previous week of at 409,015 tons, an increase over the previous week of about 8000 tons.

Chicago

CHICAGO, ILL., June 18, 1913 .- (By Telegraph.)

There can be no denying that the spirit of conservatism is abroad in the iron and steel business. It is possible to point out a fair tonnage of new business from day to day in finished steel lines, and from comparisons of last week with several weeks preceding cheerful prophecies can be made, but it must be said that new business is much below normal. The strength of the situation is in the fact that consumers are still taking

freely the heavy tonnages on mill books, wherein lies the promise of steady mill operations through the greater portion of the remainder of the year. In finished steel lines new structural tonnage affords the most likely outlook with steel bar bookings well up to mill capacity into 1914. The only weaknesses in steel products are in those which have now prevailed for several weeks, namely, the concessions in the prices of sheets, spikes and rivets and the irregularities in wire products. Mill deliveries are such that most materials are available from some mill for prompt shipment. Bar iron sold freely during the week on the basis of 1.50c. at Chicago mill. Pig-iron prices are lower and sales are more numerous, but the general situation is unchanged. In the scrap market there was less material offering.

Pig Iron.—The market here has not yet developed its critical period. Melters have been gradually meeting the views of buyers as to price only to find the buyers focusing on still lower quotations and apparently as far from the necessity of buying as at any time. There are, of course, scattering purchases in lots from carloads to 1500 tons, but this buying, neither in tonnage nor circumstances, is such as to alter the general aspects of the situation. Gray iron foundries are finding it difficult to close contracts for casting, and their melt has decreased noticeably. This condition, rather than questions of price, is paramount with them. The malleable foundries appear to have plenty of work in sight, but are not satisfied that the time is at hand for buying. Sales of Southern iron are at \$11, Birmingham, and less. Local iron is moving on the basis of \$16 delivered. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace and do not include a local switching charge averaging 50c. a ton:

Lake Superior charcoal, Nos. 1, 2, 3, 4\$16.75 to \$17.	.50
Northern coke foundry, No. 1 16.00 to 16.	.50
Northern coke foundry, No. 2 15.50 to 16	.00
Northern coke foundry, No. 3 15.00 to 15.	.50
Southern coke, No. 1 foundry and No. 1 soft 15.85 to 16.	35
	.85
	.35
	.85
	.85
	.85
Malleable Bessemer 15.50 to 16	.00
	.90
	.50
	.40
	.40
	.40

(By Mail)

Rails and Track Supplies.—The indefinite inquiry by one of the railroads of the Northwest concerning 1914 rails as mentioned in this report under date of June 4 has been withdrawn but that action has been construed incorrectly in some channels as indicating a complete cessation of extension work by that road. A number of roads will have difficulty completing the track work this summer for which rails have been ordered, a condition arising in part from delayed deliveries of 1913 rails. A noticeable weakness in spikes has developed and prices are lower. We quote standard railroad spikes at 1.80c., base; track bolts with square nuts, 2.30c. to 2.40c., base, all in carload lots, Chicago; tie plates, \$33 to \$35 net ton; standard section Bessemer rails, Chicago, 1.25c., base; open-hearth, 1.34c.; light rails, 25 to 45 lb., 1.25c.; 16 to 20 lb., 1.30c.; 12 lb., 1.35c.; 8 lb., 1.40c.; angle bars, 1.50c., Chicago.

Structural Material.—Fabricating shops in this territory in one way and another are working off a considerable portion of their stocks of structural material. While this movement has not resulted as yet in the creation of many new orders to the mills it is operating in that direction and is considered as a favorable indication. The tonnage for the new Crane Company plant at Chicago is expected to come up for figures in the near future. Contracts for fabricated steel reported last week totaled about 4500 tons, of which the largest item was 3275 tons for the Panama-Pacific Exposition Auditorium, awarded to the American Bridge Company. Other contracts included 160 tons for a viaduct for the Terminal Railroad Company, St. Louis, awarded to the Stupp Bros. Bridge & Iron Works; 124 tons for the San Antonio, Uvalde & Gulf Railroad; 287 tons for the American Trust & Savings Bank, Cedar Rapids, Iowa; to the Decatur Bridge Company; 248 tons for the Irving Park boulevard bridge, Chicago, to the Chicago Steel Products Company. The Noelke-Richards Iron Works will fabricate the 7000 tons of Bethlehem shapes for the May Company store at Cleveland. Mill tonnage of plain shapes has been augmented the past few days by the

placing of large orders by some of the car building companies. Mill conditions as regards deliveries are sufficiently improved so that prompt delivery of practically any size can be obtained from some mill. Prices are firm and we quote for Chicago delivery, mill shipment, 1.63c.

Store trade in structural shapes has witnessed a quite apparent improvement in the aggregate tonnage of orders placed during the past week as compared with the several weeks preceding. There has been no change in jobbers' prices and we quote for delivery from store 2.05c.

Plates.—The demand for plates in this market has been without special feature and light in volume. The installation of a water supply steel pipe line at Winnipeg will call for a large tonnage of plates. The new plate mill of the Inland Steel Company will be ready for operation early in July, as will its entire new battery of four open-hearth furnaces. This will bring into the market an appreciable tonnage of prompt shipment plates or, if there is a lack of demand for the steel in this form, will provide a supply of billets. Prices are firm but premium quotations have almost entirely disappeared. We quote for Chicago delivery, mill shipment, 1.63c.

Jobbers report some increase in the buying of plates from ware-house in contrast to the marked dullness that has prevailed, W_e quote for delivery from store 2.05c.

Sheets.—Current buying of sheets in carload lots is moderately active and a large number of sales of this kind are reported. There has been no change in the price situation and galvanized sheets continue to be one of the weak spots in the situation. Black sheets are less commonly shaded. We quote for Chicago delivery in carloads from mill: No. 28 black sheets, 2.48c. to 2.53c.; No. 28 galvanized, 3.53c. to 3.58c.; No. 10 blue annealed, 1.03c.

An active demand for sheets is reported from store with no pressure on quotations for the purpose of bringing out lower prices. We quote store prices without change as follows: No. 10 blue annealed, 2.25c.; No. 28 black, 2.90c.; No. 28 galvanized, 4.15c.

Bars.—One of the local mills is reported to have disposed of a round tonnage of iron bars the past week on the basis of 1.50c. at mill, while several smaller lots have been placed at prices up to 1.55c. There is no buying of bar iron by the railroads, the tonnage taken being almost exclusively for manufacturing purposes. Contracting for steel bars was limited to a few small bookings, the largest interests continuing to hold off. Specifications are strongly maintained. Reinforcing bars are also in good demand, the prospect for tonnage including the American Can Company's very large plant to be built at Chicago and the Goodyear Fire & Rubber Company's new building in this city. We quote for mill shipment as follows: Bar iron, 1.50c. to 1.55c.; soft steel bars, 1.58c.; hard steel bars, 1.60c.; shafting in carloads, 58 per cent. off; less than carloads, 53 per cent.

As compared with the capacity and facilities for delivering reinforcing bars from store, shipments have not been all that could be desired, though in excess of the tonnage handled a year ago. A normal movement in other bars is reported. For delivery from store, we quote soft steel bars, 1,95c.; bar iron, 1,95c.; reinforcing bars, 1,95c. base with 5c. extra for twisting in sizes 34 in. and over, and usual card extras for smaller sizes; shafting 53 per cent. off.

Rivets and Bolts.—Conflicting reports to the contrary there is as yet no stability to the rivet market so far as sales in this territory are concerned, and prices based on 1.85c. to 1.90c., Pittsburgh, for structural rivets prevail for current transactions. Quotations for bolts show no greater strength and even more variety, prices fitting the occasion. We quote from mill as follows: Carriage bolts up to 36 x 6 in., rolled thread, 75-10; cut thread, 75-5; larger sizes, 70-2½; machine bolts up to 36 x 4 in., rolled thread, 70-10-5; cut thread, 75-10; large size, 70-7½; coach screws, 80-10; hot pressed nuts, square head, \$5.70 off per cwt.; hexagon, \$6.30 off per cwt. Structural rivets, 34 to 1½ in., 2.08c., base, Chicago, in carload lots; boiler rivets, 0.10c. additional.

Out of store we quote for structural rivets, 2.70c., and for boiler rivets, 2.90c. Machine bolts up to 34 x 4 in., 70.75/s; larger sizes, 65-5, carriage bolts up to 34 x 6 in., 70.5; larger sizes, 65 Of Hot pressed nuts, square head, \$5.30, and hexagon, \$5.90 off per cwt.

Wire Products.—There has been a mild response in the movement of barb wire and fencing to the advent of the period between planting and harvesting when time is available for upkeep work on the farm. Aside from this the wire trade is undoubtedly dull. We quote as follows to jobbers: Plain wire, No. 9 and coarser, base, \$1.78; wire nails, \$1.98; painted barb wire, \$1.98; galvanized, \$2.38; polished staples, \$1.98; galvanized, \$2.33, all Chicago.

Cast-Iron Pipe.—The United States Cast Iron Pipe & Foundry Company has been awarded the contract for 2100 tons of pipe at Akron, Ohio. A number of smaller contracts, including 600 tons at West LaFayette. Ind., are pending, but in general the tonnage offering is stilk very light. Except on certain of the smaller sizes prices are not particularly firm. We quote as follows, per net ton, Chicago: Water pipe, 4 in., \$28.50; 6 to 12 in., \$26.50; 16 in. and up, \$25.50, with \$1 extra for gas pipe.

Old Material.—Following the notably heavy influx of scrap from the railroads the past several weeks the absence of any offerings directly into this market the past week may be commented upon in connection with the less free pouring out of old material on every hand. The Union Pacific has issued a large list for disposal at Kansas City, Omaha and Denver, and the Santa Fé continues to liquidate its enormous accumulation as rapidly and by whatever means it can. The weaknesses of the scrap market as they have existed in the past several weeks have resulted in price variations too numerous and extreme to be accurately represented by single quotations, but indications point to a steadying of the market with probable tendencies toward more normal relations in prices between scrap and new materials. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

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13	000	Con	00	Tou.

Relaying rails, standard section, subject to inspection	Old iron rails \$14.00 to \$14.50 Old steel rails, rerolling 12.50 to 12.75 Old steel rails, less than 3 ft 11.25 to 11.75
Old carwheels	Relaying rails, standard section, subject to
Heavy melting steel scrap 10.75 to 11.25	
Showling steel 10.25 to 10.75	Heavy melting steel scrap 10.75 to 11.25
Per Net Ton.	Shoveling steel
Iron angles and splice bars \$13.75 to \$14.25 Iron arch bars and transoms 14.00 to 14.50 Steel angle bars 10.00 to 10.25 Iron car axles 19.25 to 19.75 Iron car axles 19.25 to 19.75 Steel car axles 16.75 to 17.25 No. 1 railroad wrought 10.50 to 10.75 No. 2 railroad wrought 9.75 to 10.25 Cut forge 9.75 to 10.25 Steel knuckles and couplers 10.75 to 11.25 Steel springs 11.00 to 11.50 Locomotive tires, smooth 11.75 to 12.25 Machine shop turnings 5.00 to 5.50 Cast and mixed borings 4.75 to 5.25 No. 1 busheling 8.50 to 9.00 No. 2 busheling 6.50 to 7.00 No. 2 busheling 17.55 to 12.25 No. 1 cast scrap 10.50 to 11.00 Stove plate and light cast scrap 9.00 to 9.50 Railroad malleable 11.00 to 11.50 Agricultural malleable 9.75 to 10.25	Steel axle turnings
Iron arch bars and transoms	Iron angles and colice have 912 75 to 614 25
Steel angle bars 10.00 to 10.25	
Iron car axles 19.25 to 19.75	
Steel car axles 16.75 to 17.25	
No. 1 railroad wrought 10.50 to 10.75 No. 2 railroad wrought 9.75 to 10.25 Cut forge 9.75 to 10.25 Steel knuckles and couplers 10.75 to 11.25 Steel springs 11.00 to 11.50 Locomotive tires, smooth 11.75 to 12.25 Machine shop turnings 5.00 to 5.50 Cast and mixed borings 4.75 to 5.25 No. 1 busheling 8.50 to 9.00 No. 2 busheling 6.50 to 7.00 No. 1 boilers, cut to sheets and rings 7.25 to 7.75 Boiler punchings 11.75 to 12.25 No. 1 cast scrap 10.50 to 11.00 Stove plate and light cast scrap 9.00 to 9.50 Railroad malleable 11.00 to 11.50 Agricultural malleable 9.75 to 10.25	
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Locomotive tires, smooth 11.75 to 12.25	Steel knuckles and couplers 10.75 to 11.25
Machine shop turnings 5.00 to 5.50 Cast and mixed borings 4.75 to 5.25 No. 1 busheling 8.50 to 9.00 No. 2 busheling 6.50 to 7.00 No. 1 boilers, cut to sheets and rings 7.25 to 7.75 Boiler punchings 11.75 to 12.25 No. 1 cast scrap 10.50 to 11.00 Stove plate and light cast scrap 9.00 to 9.50 Railroad malleable 11.00 to 11.50 Agricultural malleable 9.75 to 10.25	Steel springs 11.00 to 11.50
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Railroad malleable	
Agricultural malleable 9.75 to 10.25	Stove plate and light cast scrap 9.00 to 9.50
Pipes and flues 7.50 to 8.00	Pipes and flues 7.50 to 8.00

Philadelphia

PHILADELPHIA, PA., June 17, 1913.

Hesitancy continues in nearly all crude and finished iron and steel products. In foundry iron considerable business is pending, but, even with prices easy, buyers refrain from closing. Some grades of foundry iron are 25c. lower. Finished materials are quieter, although about an even volume of business is moving in plates. While quiet conditions are anticipated in the next month, manufacturers take a hopeful view of the situation, believing that active buying will be resumed by September. Developments in tariff revision are being closely observed, the proposed placing of pig iron and ferromanganese on the free list and reductions in finished steel being of paramount interest. The old material market is quiet and prices are easy. Coke is comparatively firm.

Iron Ore.—Negotiations noted last week developed into an order for 50,000 tons of Imataca ore, taken for delivery over the remainder of this year, by the Alan Wood Iron & Steel Company, at a price slightly below &c. a unit, on dock here. The company already has a contract in force for 500,000 tons of this ore for delivery over a period of five years. No other transactions of importance have developed. Importations during the week include 10,850 tons of Cuban, 3000 tons of Venezuelan and 7600 tons of Newfoundland ore.

Pig Iron.—The movement in pig iron has been comparatively light, particularly when the large tonnage under negotiation is taken into consideration. With prices easy, buyers appear to be in no haste to place quantity orders, confining purchases to small lots covering near future requirements. The Pennsylvania Railroad, which is negotiating for 9000 tons of foundry grades, has not yet placed contracts although bids

have been in for several weeks. An inquiry for some 6000 tons for third quarter, for the General Electric Company, is before the trade. A malleable maker is inquiring for 1000 tons of coke malleable for early shipment, and inquiries from the Southern Railway and the Government, for navy yards, are still pending. The Norfolk & Western Railroad has closed for 1500 tons of foundry iron, for third quarter. A transaction involving 1500 tons of charcoal pig has been closed. Cast-iron pipe makers in this district, while still figuring on a considerable quantity of low grade iron, have not been heavy purchasers. One sale of 1000 tons of Northern iron has been made to a Delaware River melter at about \$15, delivered. In the higher grades of foundry iron business has been confined to small transactions at prices around \$16.25 to \$16.50, delivered, for standard brands of No. 2 X foundry. At the same time sellers, in instances, do not turn down counter offers by consumers at \$16. Virginia producers have reduced prices for third quarter and last half 25c. a ton, quoting \$13.75 at furnace for No. 2 X and \$13.50 for No. 2 plain. A larger volume of business has been moving at these prices, mostly, however, in small lots for third quarter or early delivery. Southern iron has not been so prominent a factor in this market. Some few sales have been made at \$11, Birmingham basis, for No. 2 foundry. Gray forge for rolling mill purposes has not been active, one sale of 500 tons having been made at about \$15, delivered, while a tentative inquiry for 1000 tons is out. Steel making grades have been quiet. Some inquiry has developed for basic and prices are about \$15.75 to \$16, delivered. Standard analysis low phosphorus is firm at \$23.50, delivered here. The majority of the merchant pig-iron makers in this district are anxious for business, and while reluctant to make any sharp concessions, meet lower quotations in competition, even though the present level of selling prices scarcely brings a new dollar for an old one. Further curtailmen

Eastern	Penn	sel	vani	a	N	0.	2	,	2	ï	on	10	ıd	21	7 .			. 5	14	5.0	10	to	\$16.50
Eastern	Penn	Liy	lvan	ia	N	a.	2		nl	ai	123						5		1	5.7	15	to	16.00
Virginia	No.	2	X	Eor	un	dey											è		10	5.5	55	to	16.75
Virginia	No.	2	plai	n															R	5.3	10	to	16.50
Gray for	rge .					2 2 3										-					5.5	-	15.25
Basic					0.0	2.5		5.5		. 1		2 9	8.4	8			4		I.	5.7	75	10	16.00
Standard	low	pl	ospl	10	F135										÷				43				23.50

Ferroalloys.—There is little business in prompt ferromanganese and practically nothing in forward. Odd carloads of prompt material are quoted at \$60 to \$61 seaboard. The possibility of the removal of the duty retards forward buying. The demand for ferrosilicon is quiet. Importations of 80 per cent ferromanganese during the week at this port aggregated 934 tons.

Billets.—Orders against recent large inquiries from both Western and Eastern consumers are still held up. Eastern mills, however, are receiving a fair amount of scattered business and are well sold up for the third quarter. Mills are operating at full capacity. Prices are unchanged, Eastern mills holding basic open-hearth rolling billets at \$28, delivered here, with ordinary forging billets at \$34 minimum, Eastern mill.

Plates.—Eastern mills are operating at full capacity but are able to make deliveries on some classes of material in two to three weeks. Daily orders, together with specifications, average about the rate of shipment. No large contracts for boat plates have developed, although one Delaware River yard has an order for 10 barges which will require about 1000 tons of plates. Eastern plate makers still hold out as a rule for 1.75c delivered here, although Western plates for somewhat more extended shipment can be had at 1.60 to 1.65c here.

Structural Material.—A fair amount of business is moving in miscellaneous plain material. Some small bridge orders, taking upward of 200 tons, have been let by the Pennsylvania Railroad, also 170 tons for sheds at Pottsville, Pa. Several good building projects are in prospect. Mills in the East are now able to make good shipments on practically all classes of material and prices for plain shapes are now on the basis of 1.65c delivered here.

Sheets.—While business is largely in small lots, the average is fully up to Eastern mill capacity. Consumers are urging makers for delivery against orders. Specifications on contracts are heavy. Prices are comparatively firm, No. 10 gauge, blue annealed sheets being quoted at 1.90c delivered here, with Eastern

makers obtaining up to 1.95c for prompt smooth rolled sheets.

Bars.—The demand is light and irregular and competition for business offered is sharper. Ordinary iron bars are weak at 1.45c at mill, equal to 1.52½c delivered here, although better grades command slightly higher prices, Mills, as a rule, are less actively engaged. Steel bars have not been active, but quotations are unchanged at 1.55c to 1.60c delivered in this district.

Coke.—The decision of the Interstate Commerce Commission means a general reduction of 10c a ton in freight rates on coke coming into this district, which is expected to be made applicable from all producing districts and will be effective August 1. Makers maintain prices and large consumers hold off. A fair day to day trade in foundry coke is moving. Furnace coke has been comparatively quiet. Prices are unchanged at \$2 to \$2.15 at oven for prompt and \$2.35 to \$2.50 for forward furnace coke. Foundry coke ranges from \$3 to \$3.25 at oven. The following range of prices is quoted, per net ton, for deliveries in this vicinity:

Connellsville	furnace	coke		 		 ۰		 .\$4.05	to	\$4.50
Connell: ville	foundry	coke		 		 ÷		4.90	to	5.35
Mountain fu	rnace co	ke		 				 . 3.75	10	4.10
Mountain for	undry co	lce						4.50	10	5.00

Old Material.—The market is extremely dull. Most buyers have withdrawn from the market and others take on only small bargain lots. One sale of 1000 tons of No. 1 heavy melting steel was made at \$11.55 delivered, and a small bargain lot was moved at \$11.57 delivered, and a small bargain lot was moved at \$11.58 delivered, and a small bargain lot was moved at \$11.59 delivered, and a small bargain lot was moved at \$11.59 delivered, and in the majority of grades not enough business is moving to establish prices. An approximate range for delivery in buyers' yards in this district, covering eastern Pennsylvania, taking freight rates varying from 35c to \$1.35 per gross ton, is as follows:

No. 1 heavy melting steel\$11.50 to \$ Old steel rails, rerolling (nominal)\$15.00 to Low phosphorus heavy melting steel scrap	
(nominal)	17.00
Old steel axles (nominal)	18.00
Old iron axles (nominal) 25.50 to	26.50
	18.00
	13.00
No. 1 railroad wrought :	14.75
	12.00
	11.00
No. 2 light iron (nominal)	6.00
No. 2 cut busheling 8.00 to	8.25
Wrought turnings 8.00 to	8.50
Cast borings 8.00 to	8.50
	13.50
	10.00
	10.00
Railroad malleable (nominal)	12.00

Cleveland

CLEVELAND, OHIO, June 17, 1913.

Iron Ore.—Ore firms that expected to make additional sales during the spring have given up hope of taking on any more business until late in the season. Very little has been sold since the buying movement during the winter, and in view of the conditions of the pig-iron market sellers do not look for any further buying before fall and possibly not then. Ore is moving down the lakes at a heavy rate and June shipments are expected to beat all former records. We quote prices as follows: Old range Bessemer, \$4.40; Mesaba Bessemer, \$4.15; old range non-Bessemer, \$3.60; Mesaba non-Bessemer, \$3.40.

Pig Iron.—The market continues very dull. Some foundries are making inquires, but few are placing orders in spite of the fact that the end of the first half is close at hand. The melt continues good and shipments are heavy. However some foundries will have enough iron left over from their first-half contracts to last them a few weeks during the third quarter. The northern Ohio melter who had an inquiry out last week for 1200 to 1800 tons has decided to purchase only 400 tons for the present. In spite of the fact that there has not been an active buying movement for the last half the recent activity of some of the furnaces has resulted in a fair volume of quiet buying without consumers coming into the market with inquiries. The market is weak and there is still considerable uncertainty about prices. One Cleveland interest has reduced its price to Cleveland consumers to \$14.75, delivered, for No. 2. In the Valley the general price is \$14, although some sales are reported at \$14.25. Prices on Southern iron appear to be well maintained at \$11, Birmingham, for No. 2.

both prompt shipment and the remainder of the year we quote, delivered Cleveland, as follows:

Bessemer																				
Basic																				
Northern	No. 2	four	idry	0										0	1	4	.7	5	to	15.00
Southern	No. 2	fou	ndry																	15.35
Gray forg	·						0.1				0.0				0	0	0. 1			14.65
Jackson C	ounty	silve	егу,	8	p	er	-	eı	ıt.	8	ili	co	n				8. 1			20.55

Coke.—As few foundries have placed contracts either a buying movement for the last half will be started shortly or there will be an increased demand for spot coke. Prices are stationary. Most standard grades of Connellsville foundry coke are quoted at \$3 per net ton at oven for spot shipment and contracts. Connellsville furnace coke is quoted at \$2.15 to \$2.20 for spot shipment and \$2.25 for contract.

Finished Iron and Steel.—The improved demand noted a week ago appears to be holding up well. This applies both to specifications and current orders. A fair volume of new inquiries is coming out for steel bars, plates and structural material both for prompt shipment and for delivery at the convenience of the mills. Steel bars are selling at 1.40c. and 1.45c., Pittsburgh, the latter price being for early delivery. Plates and structural material are quoted at 1.45c. to 1.50c., mills asking the latter price for early delivery. For quick shipment Eastern mills are taking some orders for plates and shapes at 1.60c., Pittsburgh. Local bar iron prices have been affected by the weakness in the Chicago district and are lower. We quote iron bars at 1.55c. to 1.60c., Cleveland mill. The demand is light. A few carload lots of forging billets have been sold in the local market at \$34, Pittsburgh. The demand for sheets is light and regular prices are not being maintained by some of the smaller mills. The Massillon Bridge & Structural Company, Massillon, Ohio, has taken the contract for the viaduct on North Fourth street, Columbus, Ohio, that will require 1400 tons of steel. Considerable building work in this city requiring good sized lots of structural steel are pending. The general contract for the May Company building in Cleveland has been awarded to the Locke Construction Company, St. Louis, which has sublet the steel contract, involving 8000 to 9000 tons, to the Noelke-Richards Iron Works, Indianapolis, Ind. Local warehouse business continues good, with no change in prices. Jobbers' prices are 2.10c. for steel bars and 2.25c. for plates and structural material.

Old Material.—Further weakness has developed and quotations on several grades are 25c. to 50c. a ton lower. Other quotations are nominal. Sales of machine shop turnings have been made as low as \$4.60 per net ton, and it is doubtful if producers could get that price to-day. The demand is very light. None of the local mills is in the market for heavy steel scrap or other grades. Some dealers feel that bottom has been reached and that the demand will improve somewhat about July 1. We quote f.o.b. Cleveland as follows:

Per	Gross Ton.
Old iron rails Steel car axles Heavy melting steel	\$13.00 to \$13.50 14.50 to 15.00 18.00 to 18.50 11.00 to 11.50
Relaying rails, 50 lb. and Agricultural malleable	
Light bundled sheet scrap	9.00 to 9.50
Iron car axles	Net Ton. \$21.00 to \$22.00 6.25 to 6.50

Iron car axles	
Cast borings 6.25 to	6.50
Iron and steel turnings and drillings	4.50
Steel axle turnings 8.00 to	8.50
No. 1 busheling 10.00 to	10.25
No. 1 railroad wrought	12.00
No. 1 cast 11.25 to	11.75
Stove plate 8.00 to	8.50
Bundled tin scrap 11.00 to	11.50

Birmingham

BIRMINGHAM, ALA., June 16, 1913.

Pig Iron.—With large and small furnace interests offering Alabama pig iron at \$11 and with more inquiry than for some time, the outlook is one for larger trading on this level. This price is about as low as some furnaces can quote with profit. One furnace interest which is manufacturing a special manganese iron is still quoting at \$11.50, one sale of 1000 tons on that basis having been made. One broker secured 500 tons for Far Western delivery at \$11.50 and a number of small lots were sold at that figure. All during the downward course of prices sales at a figure over the minimum have been reported. It is understood that the Woodward Iron Company will blow in its new furnace, which will take the place of one that has been blown out for repairs. A

sale of 1500 tons of high silicon iron is reported at \$11.50. There is a considerable amount of negotiation in progress and the general feeling appears to have improved with the reaching of a lower level. Quotations per gross ton, f.o.b. Birmingham furnaces, are as fol-

No. 1 foundry	and	soft.	 	\$11.50 to \$12.00
No. 2 foundry				
No. 3 foundry			 	10.75 to 11.25
No. 4 foundry			 	10.50 to 11.00
Gray forge				
Basic				
Charceal			 	24.50 to 25.00

Cast Iron Pipe.—Southern water pipe concerns are doing a good business in small sizes, but no large municipal contracts have been received in some time. There has been no further curtailment in production, but even at the present rate there is considerable accumulation. Interest is taken in the prospective business with Chile, Porto Rico and Buenos Ayres, but so far the Southern interests do not report requests to bid. Lack of interest in municipal bonds is credited with the unsatisfactory state of the pipe trade. Soil pipe is in better demand. We quote lower prices at \$21 for 4 in., \$21 and \$20 for 6 in. and upward, with \$1 added for gas pipe.

Coal and Coke.-Coke is the brightest spot in the Coal and Coke.—Coke is the brightest spot in the Southern market and there seems no end in sight to the demand of the past several months. The addition to the Woodward Iron Company's Koppers by-product plant will soon be completed. Ramsey & McCormack have no definite announcement regarding the Semet-Solvay plant to be erected by them. Prices continue at \$3 to \$3.50 for furnace coke and \$3.50 to \$4.25 for foundry coke per net ton at the ovens. Coal is being mined at coke per net ton at the ovens. Coal is being mined at a greater rate than has probably marked any prior summer period, with all of it taken care of. The Pratt Consolidated has completed a new washer at Banner mines and the output has been increased to 2000 tons a

Old Material.—There has been no change in the status of the old material market. Very little of any kind is moving outside of machinery and steel scrap. Dealers are not adding to stocks. Nominal quotations per gross ton, f.o.b. dealers' yards, are as follows:

Old iron axles (light)\$15.00 to	\$15.50
Old steel axles (light) 15.00 to	15.50
Old iron rails 13.50 to	14.00
No. 1 R. R. wrought	
No. 2 R. R. wrought	10.50
No. 1 country wrought 9.50 to	10.00
No. 2 country wrought 8.50 to	
No. 1 machinery cast 9.50 to	
No. 1 steel scrap 10.50 to	
Tram car wheels 10.50 to	
Standard car wheels 12.00 to	
Light cast and stove plate 8.25 to	8.75

St. Louis

St. Louis, Mo., June 16, 1913.

Business reports and crop conditions are favorable throughout this territory, but mills and foundries are waiting apparently in the hope of further reductions in

Pig Iron.—Inquiries are not numerous and for the st part of the hand-to-mouth type. Sales during the most part of the hand-to-mouth type. Sales during the week included 1000 tons of basic for shipment in the next 60 days, 250 tons of high silicon Southern pig and 200 tons of foundry for prompt shipment. Shipments on contracts continue heavy, with no requests to hold

contracts continue heavy, with no requests to hold back.

Coke.—The market is holding up well as a result of the firmness evinced at the ovens, but an inquiry now out for 7000 tons of furnace coke is expected to bring evidence as to just how strong the quotations are. By-product coke continues on a parity with Connellsville.

Finished Iron and Steel.—In standard rails, there is some movement among the small roads, including interurbans and one sale of the week was of 22 miles of rails for a line in northern Missouri. Another prospect of an order for 2500 tons is under consideration. In track fastenings a fair business is doing. In structural material, the shops are reported busy and taking their allotments as fast as they become due. Jobbers report no materially large stocks on hand. Bars are in good demand, the wagon and agricultural interests continuing very active. On all orders quick shipment is imperative, showing that the material is going into consumption. Reinforcing bars are also in good demand.

Old Material.—With the exception of relaying rails, the stock of the property of

Old Material.—With the exception of relaying rails, the scrap market is still in dubious condition. Relayers are higher and practically impossible to get. Dealers express the opinion that bottom on scrap has been

reached and that there will come a change soon. This has been helped by an inquiry from a mill for quite a large tonnage for early delivery. None of the dealers is willing to sell ahead at present quotations. We quote dealers' prices f.o.b. St. Louis as follows:

Per Gross Ton.	
Old iron rails \$11.75 to \$12.25 Old steel rails, rerolling 11.75 to 12.25 Old steel rails, less than 3 ft 10.50 to 11.00	
Relaying rails, standard section, subject to inspection 23.00 to 24.00 Old carwheels 12.50 to 13.00 Heavy melting steel scrap 10.50 to 11.00 Frogs, switches and guards cut apart 10.50 to 11.00	
Per Net Ton.	
Iron fish plates \$10.50 to \$11.00 Iron car axles 18.00 to 18.50 Steel car axles 15.50 to 16.00	
Wrought arch bars and transoms 13.00 to 13.50 No. 1 railroad wrought 9.75 to 10.25 No. 2 railroad wrought 9.25 to 9.75	
Railroad springs 8.00 to 8.50 Steel couplers and knuckles 9.00 to 9.70	
No. 1 dealers' forge	
No. 1 busheling 9.00 to 9.50 No. 1 boilers, cut to sheets and rings 6.00 to 6.50 No. 1 cast scrap 10.00 to 10.50	
Stove plate and light cast scrap. 7.00 to 7.50 Railroad malleable 9.00 to 9.50 Agricultural malleable 7.00 to 7.50	
Pipes and flues 7.00 to 7.50 Railroad sheet and tank scrap 6.00 to 6.50 Railroad grate bars 7.00 to 7.50	
Machine shop turnings 5.75 to 6.25 Bundled sheet scrap 4.75 to 5.25	

Cincinnati

CINCINNATI, OHIO, June 18, 1913.—(By Telegraph.)

Pig Iron.—The past few days brought out a number of conflicting reports, but practically all local iron merchants agree that new business is slow in closing. However, there are a number of inquiries out, included in which are 2500 tons of foundry iron from a central Inwhich are 2500 tons of foundry iron from a central Indiana firm and about half that quantity from central Ohio, beth for last-half shipment. Another melter in Indiana wants 1000 tons of foundry grades for shipment in the next four months. Although shipments on contracts are moving at what is now considered a satisfactory rate there is apparently nothing to justify the higher figures that several producers in both the Northern and Southern districts are asking. On the contrary there have been further slight recessions and the furnaces have been grudgingly giving way, realizing that there have been further slight recessions and the furnaces have been grudgingly giving way, realizing that they are now too close to the cost line. Southern No. 2 iron is now obtainable at \$10.75, Birmingham basis, and Northern No. 2 at \$14.50, Ironton, although the larger percentage of producers are asking more than the figures named. An inquiry for 8000 tons of basic for shipment in the third quarter comes from a southern Ohio manufacturer. Malleable is slow and is quoted around \$14.50 to \$14.75, Ironton. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1	foundry and	1 soft	14.50 to \$	15.00
Southern coke, No. 2	foundry and	2 soft	14.00 to	14.50
Southern coke, No. 3	foundry		13.50 to	14.00
Southern, No. 4 foun	dry		13.00 to	13.50
Southern gray forge			12.50 to	13:00
Ohio silvery, 8 per ce				20.70
Southern Ohio coke,	No. 1		16.70 to	17.20
Southern Ohio coke,	No. 2		15.70 to	16.20
Southern Ohio coke.	No. 3		15.45 to	15.95
Southern Ohio Maller				15.70
Basic, Northern			15.70 to	15.95
Lake Superior charco				19.25
Standard Southern ca	rwheel		27.25 to	27.75

(By Mail)

Coke.—It is reported that two southern Ohio blast furnaces have purchased their last half requirements, the total averaging about 35,000 tons. Foundry coke is also moving at a fairly satisfactory rate on contracts, and there is considerable new business. Prices are unand there is considerable new business. Prices are unchanged on prompt shipment furnace coke, from \$2.20 to \$2.25 per net ton at oven being quoted in all three districts. It is now rumored that the oven operators are more disposed to meet the views of pig-iron producers, and that contracts have been taken at prices slightly above the prompt shipment quotations. Foundry coke is quoted around \$2.75 to \$3.25 at oven,

Finished Material.—The situation is unchanged, except for a better reported demand for sheets. The local sheet mill is nearly six weeks behind on orders, and will only close down one week, beginning July 1, instead of the usual two weeks. From several sources it is reported that railroad track material is difficult to obtain, where prompt delivery is wanted. Local warehouse quotations on steel bars are from 2.05c. to 2.10c., and on structural material from 2.15c. to 2.20c. Blue annealed sheets, No. 10 gauge, are quoted from stock at 2.40c.

Old Material.—Prices are weaker, and there is nothing in sight to indicate any change for the better. Buyers of almost all kinds of scrap material appear to have the upper hand. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio, and Cincinnati, and the maximum quotations are dealers' prices f.o.b. at vards:

yards:					
	Per G	ross	Ton.		
Rundled sheet scrap Old iron rails	and u	ap		 12.75 19.75 to 11.75 to 9.75 to	to 13.25 20.25 12.25 10.25
	Per 1	Net 7	Con.		
No. 1 railroad wroug Cast borings	ght	inside)	5.00 to 5.00 to 9.50 to 6.75 to 17.00 to 10.75 to 6.25 to	5.50 5.50 10.00 7.25 17.50 11.25 6.75 8.50

San Francisco

San Francisco, Cal., June 10, 1913.

In most departments important inquiries are lacking, but current business from store keeps up extremely well, being considerably heavier than a year ago. A lively jobbing movement is also reported in the interior and southern California markets, and resale prices everywhere are well maintained. While merchants feel some apprehension regarding the future the rapid reduction of supplies on hand is accompanied by a noticeable improvement in specifications. Plans for extensive railroad financing for needed improvements in this district and increasing activity in some other lines of development give some ground for encouragement.

Bars.—Large projects requiring reinforcing bars have been rather slow to develop, and there is more effort to get new business than for some months. Small business, however, is coming out in good shape, and the demand for prompt delivery is strong. Recent arrivals have been well cleaned up and local mills have no trouble in disposing of their current output at full prices. Business in soft steel bars from store is active, and with stocks running low merchants' specifications are keeping about even with current needs. Soft steel bars in jobbing lots, from store, are quoted at 2.75c. and iron at 2.65c.

2.65c.

Structural Material.—The May building record for San Francisco was \$1,728,244 compared with \$3,152,020 for the previous month, and a similar decrease is noted in most other cities of the coast. The letting of the San Francisco auditorium to the American Bridge Company disposes of one of the principal jobs of the year and bids will be in this week for the city hall. The Sather campanile contract will be placed shortly and the C. C. Moore building, First and Mission streets, is about ready for figures. The Mortenson Construction Company has a small job on Ellis street near Mason, and there are others in immediate prospect. Nothing has been heard lately as to several large office buildings in contemplation.

Rails.—Business is rather quiet, as the difficulty of financing new extensions is keeping the smaller interurban roads out of the market. A fair number of small orders is reported, however, and light rails and portable track for mining and construction work are in good demand. While several important logging roads are expected to be undertaken this year there is little inquiry from that direction at present. An outline of projected improvements for this year furnished by the Southern Pacific to the California Railroad Commission includes an expenditure of \$2,134,220 for double track in Nevada and \$4,982,260 for various new lines in the Pacific division.

Sheets.—The disturbance caused by the shading of prices has subsided, the shading being apparently confined to a few concerns which have no heavy tonnage to offer. Notwithstanding reports of ample supplies of galvanized sheets on the coast some mill agents report current specifications ahead of last year, with about a normal tonnage coming out for third quarter. There is still some scarcity of blue annealed, and jobbing business in all lines is very active.

Plates.—Deliveries are still slow and resale prices are firmly maintained, with a steady demand from store. The outlook for tank material is favorable, as oil interests are putting up large distributing plants at many points.

Merchant Pipe.—Supplies in store all over the State are showing signs of depletion, and specifications have increased materially in the last fortnight. Merchants are not disposed to put in a large tonnage, but a fair supply is needed to take care of the current trade, the consuming demand being fully as heavy as last month. No inquiries of special importance are coming out for oil casing or line pipe, but the jobbing movement of oil-well supplies and irrigation casing continues active.

Cast-Iron Pipe.—The tonnage so far this month has been satisfactory, but not much new business is in sight. San Francisco is expected in the market shortly for about 2400 tons. A number of towns have voted bonds for water-system extensions, but find difficulty in obtaining money at the rates specified, and construction is accordingly delayed.

Pig Iron.—Local foundry work appears to be fairly active, but the pig-iron business is extremely quiet, and there is considerable divergence in quotations. Buyers are probably influenced by the prospect of new importations and local production as well as the weakening tendency in the domestic market. According to the announced plan the West Coast Iron Company will soon be making pig iron, and some importers are offering pig iron from India for July shipment, though prices have so far been kept private. A moderate tonnage of Chinese iron is also being booked to arrive in the fall. Some agents are still asking \$23.58 per gross ton for No. I Southern foundry iron, while others are offering No. I soft, which takes the place of No. I Middlesbrough at \$22.75.

Coke.—Buyers are taking only moderate interest in offerings for shipment by sailing vessel, though some is being sold for early arrival and a good many small sales are made from yard, on which prices are still \$15 to \$15.50 per net ton. Offerings are made from a cargo due this month at \$14 per gross ton, while German Syndicate coke for loading on sailing vessel is quoted at \$11.50 to \$12 per gross ton.

Old Material.—Values on cast-iron scrap and rerolling rails are not so firmly held as last month, though all desirable lots of cast scrap find ready sale and all descriptions are moving well. Steel melting scrap remains strong with no heavy supplies offered. There is little inquiry for relaying rails, but all offerings are firmly held. Prices are quoted as follows: Castiron scrap, per net ton, \$17.50 to \$18; steel melting scrap, per gross ton, \$12; wrought scrap, per net ton, \$13 to \$15; rerolling rails, per net ton, \$16.50 to \$17.

Cutting Demoralizes British Markets

Belgian and French Makers Cut Prices on Semi-finished Steel-Tin Plate Trade Poor

(By Cable)

LONDON, ENGLAND, June 18, 1913.

No statement of the affairs of James Watson & Co., who failed last week, will be available for some time, but the position of the firm is believed to be very bad. The pig-iron holding of the firm has passed into strong hands, probably prepared to nurse it. Trade buying continues small, as buyers have no confidence, and the reckless price cutting on semi-finished steel by Belgian and French makers is demoralizing sentiment. The tin plate trade is poor, and mills must begin to shut down again. The Belgians and French are quoting 80s. for 4-in. billets, 82s. 6d. for 2-in. billets and 85s. for sheet bars, the Germans refusing to compete. Nominal stocks of pig iron in Connal's stores are 225,859 tons, against 232,540 tons a week ago. We quote as follows:

Cleveland pig-iron warrants (Tuesday), 55s. 7½d., against 55s. 6d. a week ago.

No. 3 Cleveland pig iron, makers' price f.o.b. Middlesbrough, 55s. 9d., unchanged.

Ferromanganese, £11 12s. 3d., f.o.b. shipping port.
Steel sheet bars (Welsh) delivered at works in Swansea Valley, £5 5s.

German sheet bars, f.o.b. Antwerp, 92s. 6d. German 2-in. billets, f.o.b. Antwerp, 82s. 6d.

German basic steel bars, f.o.b. Antwerp, £5 1s., a dedine of Is.

Steel bars, export, f.o.b. Clyde, £7 15s.

Steel joists, 15-in., export, f.o.b. Hull or Grimsby, £6 158., a decline of 25. 6d.

German joists, f.o.b. Antwerp, £5 12s. to £5 15s.
Steel ship plates, Scotch, delivered local yards,

7s. 6d. Steel black sheets, No. 28, export, f.o.b. Liverpool.

55 Steel rails, export, f.o.b. works port, £6 15s.

Tin plates, cokes, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 13s. 71/2d., a decline of 11/2d.

(By Mail)

More Inquiry for Pig Iron, But Finished Lines Are Slow and Continental Competition Is Keener

LONDON, June 7, 1913.

At last the long drawn-out squeeze in the Cleveland pig iron market has ended and prices have assumed a more reasonable appearance, which has already done something to encourage new buying at the hands of the trade at home and abroad. There has been a distinct rate at home and attractions on a pretty the trade at home and abroad. There has been a distinct revival of inquiry, and transactions on a pretty extensive scale are expected to be arranged in the early future. The manipulation has, however, done a lot of damage to the trade. The squeeze completely choked off buying and temporarily banished confidence. The Middlesboro exports for May showed a considerable reduction as regards pig iron, the total being only 86,000 tons, against 104,000 tons in April. The falling off is attributable to exports being postponed, and to off is attributable to exports being postponed, and to the difficulty in obtaining pig iron at normal rates, owing to the quantities being sent into warrant stores to secure the high premium which cash iron commanded. The hematite position is easier, with East Coast at 78s. 6d. to 79s. and West Coast at 82s. 6d. f. o. b. Ore, too, is certainly easier. The Krupps, of Command are reported to have hought a large amount Germany, are reported to have bought a large amount of Wabana ore. Rubio is obtainable at about 20s., though 20s. 6d. is usually quoted.

Higher Wages and Labor Unrest

Wages in the North of England finished iron trade have just been raised in accordance with the sliding scale arrangements. This is a further handicap for producers who are already complaining bitterly of the high costs of manufacture. A lot of labor unrest is developing and the tendency among iron masters is to high costs of manufacture. A lot of labor unrest is developing and the tendency among iron masters is to take a rather gloomy view of the position. In the Midlands the friction started with the tube workers. A number of mills are closed and others threaten to shut down. Considerable difficulty is experienced in getting specifications against old orders and the future is regarded with growing anxiety. The sentiment of the market at large may, however, take a turn for the better if once the financial and political outlook improves and buyers pluck up courage to place contracts proves and buyers pluck up courage to place contracts for material which it is believed is required but for which orders are being held back in the hope of lower prices.

The Continental situation has been and is still bad,

The Continental situation has been and is still bad, with continual pressure to force sales, especially of bars and plates and semifinished steel. Very low prices have been accepted by the French and Belgian steel plants, and the Germans have also taken greatly reduced prices in order to make sales. So far as the export trade is concerned, however, German makers seem quite satisfied, as they are very well sold in nearly all descriptions of syndicated material, and in rails have nothing available for delivery before the middle of next year. Their output of semifinished steel is also said to be booked for some months ahead. For all this, the pressure of competition from the Continent is the incubus which weighs on the market with nightmare effect.

effect.

Boston

Boston, Mass., June 17, 1913.

Old Material.-The exceedingly dull market has re-Old Material.—The exceedingly dull market has restricted in lower prices on steel, turnings and borings. The dealers believe that normally business should be better, considering the activity of the steel mills, but seasonable influences are added to the tendency which has prevailed for some weeks. The quotations given below are based on prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New

England points which take Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

	\$9.00
	14.50
	14.00
Old iron axles 21.00 to	21.50
Mixed shafting 13.00 to	13.25
No. 1 wrought and soft steel 10.25 to	10.50
Skeleton (bundled) 7.50 to	8.00
Wrought-iron pipe 8.50 to	9.00
Cotton ties (bundled) 8.50 to	9.00
No. 2 light 3.50 to	4.00
Wrought turnings 5.25 to	5.50
Cast borings 5.25 to	5.50
Machinery, cast 11.50 to	12.00
Malleable 10.00 to	10.50
Stove plate 7.75 to	8.25
Grate bars 6.75 to	7.00
Cast-iron carwheels	14.00

Buffalo

BUFFALO, N. Y., June 17, 1913.

Pig Iron.-Continued increase in inquiry is noted, but business placed consists of small lots, ranging from carloads to 200 and 300 tons. The aggregate of inquiry under negotiation represents a tonnage of perhaps 14,000 to 15,000 tons of foundry grades and 3000 to 4000 tons of malleable, principally for third quarter delivery. This includes the inquiry of the General Electric Company for about 12,000 tons of foundry iron and Company for about 12,000 tons of foundry iron and 2000 tons of malleable. Two large consumers reported as having covered their third quarter requirements are the Westinghouse Company and the American Locomotive Company, but apparently most users, even those whose contracts are filled, are ordering only in small quantities to carry them through the first half. The price schedule has sagged further since last week's report, but prices are now fairly firm, at least as regards the minimum shown in the list below, the price division for the various grades not being very distinct. It is the minimum shown in the list below, the price division for the various grades not being very distinct. It is rumored that some low silicon iron has been sold at \$13.75, Buffalo, but on the other hand producers interviewed state that offers of tonnages up to 500 tons for gray forge at that figure have been refused. It is reported malleable has been sold at \$14.50; also that \$15.50 and over has been obtained for small tonnages, which shows the irregularity of the market and the which shows the irregularity of the market and the different ideas of furnacemen. Some iron is being piled in furnace yards. This is occasioned to a certain extent by the holding of iron for shipment east via the Erie Canal, such shipments having been delayed by the late opening of the canal and the difficulty of obtaining boats for loading. We quote as follows for current quarter and second half f.o.b. Buffalo:

No. 1 foundry	4.75
No. 2 X foundry 14.25 to 1	
No. 2 plain 14.00 to 1	
No. 3 foundry 1	
Gray forge	4.00
Malleable 14.50 to	
Basic 15.25 to 1	
Charcoal 16.00 to	7.00

Finished Iron and Steel.—Sentiment is it has been for several weeks and a number of agencies it has been for several weeks and a number of agencies. The Bufreport specifications coming in more freely. The Buffalo agency of the leading interest advises that specifications for the first half of June have exceeded those for the same period of last month.

Mills are continuing to ship up to the limit of their capacity in getting out orders placed. Some let up is noticed, however, in the pressure for delivery, mills having caught up with the most urgent demands. Notwithstanding this many mills are still behind on certain sizes and a great deal of material asked for cannot be delivered before the fourth quarter of the year. There have been no cancellations or suspensions of There have been no cancellations or suspensions of orders. In fabricated structural material the volume of business shows a slight recession as compared with the past few weeks and prices are a trifle softer, competition being keen. Architects report that a large amount of business for which they have plans on their boards is being held up, awaiting easier financial conditions. Bids went in this week for steel for a department store for Jenss Brothers, Niagara Falls, N. Y., requiring 250 tons; also bids for the Masonic Temple at Watertown, N. Y., taking nearly 400 tons—and for a factory building for the Lumen Bearing Company, Buffalo, 100 tons. Contract is to be placed this week for steel for an addition to the Rochester University, Rochester, N. Y., requiring 150 tons, for which bids were submitted last week. Bids went in to-day for the of business shows a slight recession as compared with

200 tons of steel required for the poultry building at

200 tons of steel required for the poultry building at the New York State Fair Grounds, Syracuse, also for 300 tons of steel for a 3-story factory addition for the Chadwick Brass Company, Hamilton, Ont.

The Standard Structural Steel Company, Buffalo, was low bidder for the 200 tons of steel for the new club house of the Order of the Orioles, Buffalo, and the American Bridge Company was awarded contract for the 300 tons of steel required for the Manufacturers and Traders National Bank building, Buffalo.

Old Material The week has shown no change in

Old Material.—The week has shown no change in the situation as regards demand, which is exceedingly limited for all classes of material, with some further softening observable in prices for some commodities, particularly in old car wheels. One sale of a small tonnage in this line for the week is noted at \$13, delivered at buyer's plant, Buffalo. Carwheels are livered at buyer's plant, Buffalo. Carwheels are "going a begging," consumers being evidently filled up on this commodity and not anxious to take on any additional tonnage even at reduced prices. Cast borsales made were based on a price of about \$1 per ton under last week's quotations for Pittsburgh delivery. We quote as follows, per gross ton, f.o.b. Buffalo.

Heavy melting steel\$11.50 to \$	12.00
Boiler plate, sheared	13.75
No. 1 busheling scrap 10.50 to	11.00
No. 2 busheling scrap 8.00 to	8.50
Low phosphorus steel	17.00
Old iron rails	15.50
No. 1 railroad wrought	13.50
No. 1 railroad and machinery cast scrap 13.50 to	14.00
Old steel axles	17.50
Old iron axles	23.50
Old carwheels	13.00
Railroad malleable	12.75
Locomotive grate bars	10.50
Stove plate (net ton) 9.75 to	10.00
Wrought pipe 9.50 to	10.00
Wrought iron and soft steel turnings 6.00 to	6.50
Clean cast borings 6.50 to	16.00
Bundled tin scrap	10.00

New York

New York, June 18, 1913.

Pig Iron.—It would require a considerable stretch of imagination to find any activity or substantial promise of it in the present market. The inquiry of the General Electric Company, which calls for various lots of high silicon, low silicon, high phosphorus and low phosphorus irons, altogether amounting to about 14,000 tons, is the largest before the trade. Deliveries wanted cover the second half. No part of this iron is known to have been closed. The inquiry of the Pennsylvania Railroad, which came out some weeks ago and sylvania Railroad, which came out some weeks ago and takes in about 9000 tons, also remains open. Several thousand tons of basic iron is wanted for a Connecticut plant. While \$16 at tidewater is the nominal price for basic, this figure would need to be reduced considerably to meet buyers' ideas. While little business has erably to meet buyers' ideas. While little business has been done in foundry iron by New England melters, the prices quoted on small lots indicate that any good sized contract would bring out keen competition from the Buffalo district, so that Virginia iron to compete would need to be quoted far below the \$14 basis for No. 2 X that has been nominally maintained for some time. Buffalo iron has been quoted at this price. No. 2 X that has been nominally maintained for some time. Buffalo iron has been quoted at this price at furnace and the freight from Buffalo to New England points at \$2.45 is \$1.30 less than the Virginia freight; there have been small lot sales of Buffalo iron, however, at \$14.50. In eastern Pennsylvania there has been little change in the situation. With the 10-cent reduction in the freight on Connellsville coke granted by the Interstate Commerce Commission, furnaces in that district have a mitigation of 12 or 13 cents on a ton of pig iron but that does not go far in meeting the lower cost demands of a time like the present. Few lower cost demands of a time like the present. Few foundries need to buy iron for the early part of the third quarter. In some cases shipments on second quarter contracts are being stretched out into July. We quote Northern iron for tidewater delivery as follows: No. 1 foundry, \$16.50 to \$16.75; No. 2 X. \$16 to \$16.50; No. 2 plain. \$15.75 to \$16. Southern iron is quoted at \$16.50 to \$16.75 for No. 1 foundry and \$15.75 to \$16.25 for No. 2.

Structural Material.-New work on which bids are asked includes 1000 tons for a pier shed at Communi-paw, N. J., for the Central Railroad of New Jersey and for tons for the Brooklyn Rapid Transit. After a long paw, N. J., for the Central Rallroad of New Jersey and 600 tons for the Brooklyn Rapid Transit. After a long delay a new contract for the Equitable Building has been signed, as already noted, and under it American Bridge Company is to furnish about 34,000 tons, or nearly 10,000 tons more than was used in the Wool-

worth Building. The Heddon Iron & Steel Company has secured the contract for the Plaza Hotel at Newark, N. J., calling for 1200 tons and the Hay Foundry & Iron Works is successful bidder for 1000 tons for a power house for the Public Service Commission of New Jersey. The Goldman Printing Company's building of 1000 tons at Lafayette street, New York, is to be furnished by Ravitch Bros. It is reported that the George A. Just Company has been awarded the contract for an office and theater building at Broadway and Forty-seventh street calling for 1000 tons. The market is rather quiet and deliveries of plain material are easier. Mill shipments of plain material are obtainable in five to six weeks at 1.61c., New York, and at 2.10c. to 2.15c, from store. worth Building. The Heddon Iron & Steel Company at 2.10c. to 2.15c, from store.

Plates.—The market continues quiet and new demand light. Premiums have almost disappeared and deliveries are becoming normal. There has been no inquiry of consequence for railroad cars. The Southern Railroad has given the Pressed Steel Car Company an Railroad has given the Pressed Steel Car Company an order for 345 hopper cars and the railroad itself is to build at its Lenoir plant 100 cars, the remainder of the original order of 445 cars. The delivery of specialties still causes delays for car builders. We continue to quote 1.61c. to 1.66c., New York, for mill shipments in the last half and 1.76c., New York, is still reported for quick delivery, although there is no doubt that this is gradually receding to a 1.66c, rate with some business. is gradually receding to a 1.66c. rate, with some business already done on this basis.

Bars.—New inquiries, though small, are reported better than for several weeks. Some hesitancy is noted in the closing of contracts; at the same time deliveries with some mills remain at four to five months. There is little car or railroad buying. The range of prices we quote bar iron at 1.50c. to 1.65c., New York, and steel bars at 1.56c., New York, deliveries depending on the mill. Store prices are unchanged at 2c. to 2.05c. for steel bars and 2.05c. to 2.10c. for iron bars.

Cast Iron Pipe.—The city of Cambridge, Mass., opens bids today on 450 tons. The city of New York will open bids on a contractor's job of pipe laying June 23, on which the quantity of pipe needed is not stated. The Commissioners of the District of Columbia, Washington, D. C., will open bids June 19 for 1359 net tons of pipe and 156 tons of specials. The city of Hartford, Conn., has bought at a low price 1300 tons of 24-in. pipe from a company which had bought a large quantity of such pipe but was unable to use it and was obliged to dispose of it. The general demand for pipe is not so active as it has been, fewer orders being received from private buyers, probably due to the hot weather and the continued decline in prices of pig iron. Carload lots of 6 in. are quoted in prices of pig iron. Carload lots of 6 in. are quoted at \$23 to \$24 per net ton, tidewater New York.

Old Material.—The condition of the market does

not improve. Moderate sales of cast scrap have been made but scarcely anything is doing in other classes of old iron and steel. Vigorous efforts by dealers fail to awaken interest among consumers. A large steel of old iron and steel. Vigorous efforts by dealers fail to awaken interest among consumers. A large steel company in eastern Pennsylvania says it might take in some steel scrap at \$10 delivered, but this is so far under the views of sellers that it is simply regarded as another way of stating that the company is completely out of the market. Quotations are about as follows, per gross ton, New York:

Old girder and T rails for melting Heavy melting steel scrap		\$9.00 to	\$9.50
Relaying rails		22.00 to	22.50
Rerolling rails (nominal)		12.50 to	13.00
Iron car axles		22.50 to	23.00
Steel car axles		14.50 to	15.00
No. 1 railroad wrought		12.00 to	12.50
Wrought iron track scrap		11.50 to	12.00
No. 1 yard wrought, long		11.25 to	11.75
No. 1 yard wrought, short		10.25 to	10.75
Light iron		4.00 to	4.50
Cast borings		5.75 to	6.00
Wrought turnings		5.75 to	6.00
Wrought pipe		8.75 to	9.00
Car wheels		12.00 to	10.75
No. 1 heavy cast, broken up	0, 0 0	10.25 to 8.75 to	9.25
Stove plate		7.50 to	
Malleable cast		8.50 to	9.00

Ferroalloys.—Inquiry for 80 per cent, ferromanganese is light, sales are small and few and no betterment is looked for until the tariff rate is fixed. The conservative tendency exists despite the fact that most contracts contain a clause which would give the purchaser any advantage to be derived from lower duties. Agents for the English producers have not receded from \$61, Baltimore, and there has not been enough business to bring out resale lots at any price. The market for 50 per cent. ferrosilicon continues quiet at \$75 for carloads, \$74 for 100 tens and \$73 for 600 tons or over.

German Market Continues Weak

BERLIN, June 5, 1913.

The weak, dull tone of the iron market continues. Buying is slow, and from no section of the trade has any increase in activity been reported as the result of recent price reductions. The fortnightly fixing of prices on the Düsseldorf Exchange on Friday, May 30, showed the following changes, per ton, in marks, since the previous quotations were registered:

	May 30	Previous price
Ordinary basic steel bars	108.00 to 110.00	114 to 118
Rands of basic steel	137.50 to 142.50	145 to 150
Heavy plates, basic		128 to 133
Botler plates		138 to 143
Thin plates	135.50 to 137.50	135 to 140

It should be pointed out, however, that these prices do not necessarily represent actual market conditions, for goods can be bought in many cases, especially bars, at lower prices than those here quoted. (It should be mentioned in this connection that the price of 125 marks given in last week's report for thin plates was hased upon a typographical error; the price should have

been 135 marks).

The summary of the market position given out by the Düsseldorf Exchange says that calls for delivery of pig iron are satisfactory but that business in the other sections of the trade has grown quieter, and there is great reserve in giving new orders.

great reserve in giving new orders.

The Wire Rod Association has at last been prolonged for a year, which is a more favorable result than had been looked for. The efforts to syndicate wire and wire nails, however, had to be abandoned. The latter had been for a long time the chief bone of contention, some of the most important works having pronounced the inclusion of them as a fundamental condition to their taking part further in the organization; but at the their taking part further in the organization; but at the meeting held yesterday this point was dropped and the organization finally renewed for rods alone.

The tube convention has also been temporarily renewed. It is not yet clear whether the syndicate has been agreed to, or whether the old price convention has

merely been prolonged. A committee was named to meet tomorrow to discuss further details, and no orders are to be taken before the next meeeting of the

convention on June 20.

Metal Market

New York, June 18, 1913.

The Week's Prices

Cents Per Full Copper, New York.
ElectroVake. lytic, New York.
15.12½ 45.65
45.90 Cents Per Pound for Early Delivery. lytic, 15.12½ 15.00 15.00 14.87½ 14.87½ 14.87½ 45.45 44.60 44.75

Lake copper is nominal, but sales of electrolytic are reported at lower prices. Tin is dull and lower. Lead is quiet, but firm. There has been no activity in spelter and prices have declined. Lower prices of antimony have brought out no business.

New York

Copper.—In Lake copper there has been an absence of demand in the last week and the quotation 15.50c. is entirely nominal. Resale lots of electrolytic have been sold at cut prices and, according to reports, a fair quantity was taken by consumers, perhaps 5,000,000 to 10,000,000 lb. It also has been said that 15c, cash, 30 days, delivered, for electrolytic, was met by some of the first-hand agencies and this report has been accepted by some good judges of the market, although not confirmed. One such agency reduced its price abroad to-day. Throughout the week the market has been characterized by many rumors, some of which abroad to-day. Throughout the week the market has been characterized by many rumors, some of which were dismissed at once when traced to their source. An influence which may have an effect upon the market later, but which has not been felt up to the present, is the strike for shorter hours at the refinery of the Nichols Copper Company, Laurel Hill, L. I., which is curtailing production to some extent. The price quoted to-day for electrolytic is 14.87½c., cash, New York. The London quotations are £64 15s. for spot and £64 17s. 6d. for futures. Exports this month total 13,829 lons.

Pig Tin.—The market has been dull, neither buyers nor sellers showing interest. An indication of condi-

tions is gained from the fact that 100 tons of Banca tin was returned to London June 14 on the Minneapolis. Straits tin is preferred in this market, but Banca tin is taken in times of shortage. There is plenty of tin in local warehouses, and under present conditions Banca is slow of sale. The London market has been erratic. Yesterday it declined over £3, which is attributed to financial conditions unfavorable to speculation and also to the lack of demand in this country. At one time this morning the London quotation touched £203. 5s. for spot, which was the low point of the year. Prices then rallied and settled at £204 5s. for both spot and futures. The New York price to-day is 44.75c. and futures. Arrivals this month total 1945 tons and there is affoat 1735 tons.

Lead.-This metal has continued dull but strong because of foreign influences referred to a week ago. These have progressed to a point where there is still These have progressed to a point where there is still greater possibility of London coming to this market. The price in London to-day is £21, equal to 4.48c., New York. Subtracting 15c. per 100 lb. for freight leaves 4.33c., the price at which London could buy in New York, and thus it will be seen that the metal need advance but a few points to make buying in this market feasible. Another influence tending to support the vance but a few points to make buying in this market feasible. Another influence tending to support the lead market is a fire which a few days ago damaged the plant of the St. Joseph Lead Company, Herculaneum, Mo., and which has interfered with deliveries by that company. The price of lead in New York to-day is 4.35c., and in St. Louis 4.20c.

Spelter.—In the absence of business, spelter has declined still further and is now quoted at 5.10c., New York, and 4.95c., St. Louis. Sellers are not forcing sales at those prices, but the market is nevertheless weak. In the last few weeks about 2000 tons of spelter has been shipped abroad in the endeavor to find a market.

Antimony.—The demand is as dull as ever. All brands are offered below import cost, but no business worth while is being done. Hallett's is quoted at 8.15c. to 8.25c., Cookson's at 8.60c. to 8.70c. and Chinese and Hungarian grades at 7.50c. to 7.75c.

Old Metals.-The market is unsettled, with but a small demand. Dealers' selling prices are nominally as

	Cents per 1b.
Copper, heavy and crucible	14.50 to 14.75
Copper, heavy and wire	14.00 to 14.50
Copper, light and bottoms	13.00 to 13.25
Brass, heavy	9.00 to 9.25
Brass, light	7.75 to 8.00
Heavy machine composition	13.25 to 13.50
Clean brass turnings	8.50 to 8.75
Composition turnings	11.50 to 11.75
Lead, heavy	4.25
Lead, tea	4.00
Zinc, scrap	3.85

Chicago

June 16 .- The metal market has been very dull. Such quotations as have appeared have not indicated the market position with any great clearness, but as regards copper it is believed that it may be bought at prices considerably under those asked by the large producers. In general all prices are lower, both for new and scrap metal. We quote as follows: Casting copper, 15.25c.; Lake, 15.50c. to 15.75c., in carloads for prompt shipment; small lots, 1/4c. to 3/6c. higher; pig tin, carloads, 4/7c.; small lots, 4/9c.; lead, desilverized, 4.35c. to 4.40c.; corroding, 4.60c. to 4.65c., for 50-ton lots; in carloads, 2//2c. per 100 lb. higher; spelter, 5.20c.; Cookson's antimony, 10.50c., and other grades, 9.75c., in small lots; sheet zinc is \$7.25, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots; Copper wire, crucible shapes, 13.25c.; copper bottoms, 12.25c.; copper clips, 13c.; red brass, 12.50c.; yellow brass, 9c.; lead pipe, 3.90c.; zinc, 4c.; pewter, No. 1, 33c.; tinfoil, 38c.; block tin pipe, 42c. Such quotations as have appeared have not indicated

St. Louis

June 16.—Only a medium demand is reported. Lead JUNE 16.—Unly a medium demand is reported. Lead closed the week at 4.20c.; spelter, 5c.; tin, 46.10c. to 46.60c.; Lake copper, 15.35 to 15.60c.; electrolytic copper, 15.35c. to 15.50c. In the Joplin ore market the tendency was downward in sympathy and the range of prices for 60 per cent. zinc blende was \$40 to \$43.50 per ton, while the top price for the choicest was \$45. Calamine was about \$20 for 40 per cent., while the choicest grades brought from \$23 to \$23.50. Lead ore was quiet at \$52.50. We quote miscellaneous scrap metals as follows: Light brass. \$50c.; heavy brass and light copfollows: Light brass, 5.50c.; heavy brass and light copper, 9.50c.; heavy copper and copper wire, 11c.; tinfoil, 34c.; pewter, 25c.; zinc, 3c.; lead, 3.50c.; tea lead, 3c.

Iron and Industrial Stocks

New York, June 18, 1913.

The stock market was showing some recovery under the stimulus of the Treasury Department's offer to assist in loosening the financial stringency, when the United States Supreme Court administered another blow to reviving confidence by its decision against the railroads in West Virginia, Missouri, Arkansas and Oregon. The fluctuations of the week, therefore, show a wide range. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows: day of this week was as follows:

2
Am. Can, com 21 - 27 1/2 Am. Can, pref 81 1/4- 87 1/2
Am. Car & Fdy., com. 365%- 423%
Am. Car & Fdy., pref. 108 -10834
Am. Loco., com 271/8-301/4
Am. Steel Foundries 25 - 26
Bald. Loco., com 41
Bald. Loco., pref1023/4 Beth. Steel, com 25 - 29
Beth. Steel, com 25 - 29
Beth. Steel, pref 63 1/8- 66 1/8
Case (J. I.), pref 99 Colorado Fuel 25%- 271/4
Emer-Brant, com 25
General Electric130 -135
Gr. N. Ore Cert 26 - 30
Int. Harv., com 9934-103
Int. Harv., pref 111 -11176
Int. Harv., Corp 9934-103
Int. Harv., Corp., pf.11176-112
Int. Pump, com 7 - 756
Int. Pump, pref 221/4-225/8
Lackawanna Steel 30
Nat. En. & St., com. 9% 111/2
Pressed Steel, com 20 - 2334
Pressed Steel, pref 90

IOWS.	
Railway Spring, com. 22½ 24 Republic, com 17 1/6 19 19 19 Republic, pref	
Va. I. C. & Coke 38 - 41 1/4	
Westinghouse Elec. 54 - 57 1/4 Am. Ship, com 47 1/2 - 48 1/4	
Chic. Pneu. Tool 47½-48¼ Cambria Steel 41½-44½	
Lake Sup. Corp 22 - 24 Pa. Steel, pref 60	
Warwick 10 - 101/8	
Crucible Steel, com. 1114-1214 Crucible Steel, pref. 83 - 87	
Harb. Walk Ref., com 45 Harb. Walk Ref., pref101 La Beile Iron, com 40	

Dividends Declared

The United States Cast Iron Pipe & Foundry Company, regular dividend of 4 per cent. on the preferred stock, payable in four equal installments. The first dividend is payable July 15.

The American Brake Shoe & Foundry Company, reg-

ular quarterly, 2 per cent. on the preferred stock and 134 per cent. on the common stock, payable June 30.

Pettibone, Mulliken & Co., Inc., regular quarterly, 134 per cent. on the first and second preferred stocks,

payable July 1.

The Empire Steel & Iron Co. has not declared the semi-annual dividend. The following statement was issued by President Leonard Peckitt after the directors' meeting June 10: "On account of business uncertainties was regarded unwise to declare a dividend at this

time."
The Chicago Railway Equipment Company, regular

The Chicago Railway Equipment Company, regular quarterly, 134 per cent., payable July 1.

The Walworth Mfg. Company, regular quarterly, 3 per cent., payable June 30.

The Standard Coupler Company, regular semi-annual, 4 per cent. on the preferred and 2 per cent. on the common stock, payable June 30.

The Boston Belting Company, regular quarterly, \$2 per chare, payable July 1.

per share, payable July 1.

The Otis Elevator Company, regular quarterly, 1½ per cent. on the preferred and 1 per cent. on the com-

mon stock, payable July 15.

The Sloss-Sheffield Steel & Iron Company, regular quarterly, 134 per cent. on the preferred stock, payable

July I.

The American Iron & Steel Mfg. Company, regular

The American Iron & Steel Mfg. Company, regular quarterly, 1½ per cent. on both the preferred and common stock, payable July 1.

The Canadian Westinghouse Company, Ltd., regular quarterly, 1¾ per cent., payable July 10.

The Union Switch & Signal Company, regular quarterly, 3 per cent. each on the preferred and common stocks, payable July 10.

The Brier Hill Steel Company, regular quarterly, 1¾ per cent. on the preferred stock, payable July 1.

The Westinghouse Air Brake Company, regular quarterly, 2 per cent. and 2 per cent. extra, both payable July 15.

The Continental Can Company, regular quarterly, 134 per cent. on the preferred stock, payable July 1.

The International Harvester Corporation and International Harvester Company of New Jersey, regular

quarterly, 11/4 per cent. on the common stock, payable July 15.
The J. I. Case Threshing Machine Company, regular

quarterly, 134 per cent. on the preferred stock, payable

July 1. The General Fire Proofing Company, regular quarterly, 134 per cent. each on the preferred and common stocks, both payable July 1. The Crucible Steel Company of America, regular

quarterly, 134 per cent., on the preferred stock, payable June 30.

Dayton Coal & Iron Company Receivership

A press dispatch from Chattanooga states that H. F. Noyes has been appointed receiver of the Dayton Coal & Iron Company, which has two blast furnaces at Dayton, The proceedings resulted from the suspension of James Watson & Co., Glasgow, Scotland, who are financially interested in the company.

Dominion Steel Corporation Financing.—In the annual report of the Dominion Steel Corporation, President J. H. Plummer announces that the Steel Company bonds sold in London recently amounted to £200,000, and that the directors have under consideration the issue of a further moderate amount of securities. He adds: "It is proposed that for some time to come the energies of the staff shall be devoted to the development of the steel plant as now completed, and that no further extensions shall be undertaken until the existing plant has been brought to the high-est efficiency. The equipment of the Coal Company must be not only maintained, but steadily increased, to meet the growing requirements of customers. A large part of this the directors expect to provide for out of reserves and surplus earnings." The Coal Company's output for the year amounted to 5,053,000 tons, as compared with 4,406,263 tons the previous year, while increases in output are reported by the Steel Company in all departments except rods.

Representative Roberts, of Massachusetts, has introduced a bill in the House of Representatives requiring railroads doing an interstate commerce business to use fireproof steel cars and equip their lines with automatic switches, signals, and other such safety devices as may be approved by the Interstate Commerce Commission. The bill provides fines of \$500 to \$10,000 and prison sentences from 30 days to one year. The companies are given four years in which to completely equip themselves with steel cars, at least 25 per cent of the equipment to be installed each year, and two years in which to complete safety device installations.

H. H. Light, Lebanon, Pa., until recently prominently identified with the Lebanon Valley Iron & Steel Company, has purchased from W. Vernon Phillips and Hubert E. Rogers, trustees, the plant of the Schuylkill Haven Iron & Steel Company, Schuylkill Haven, Pa., formerly operated by E. Dreifus & Co., Philadelphia. The plant has been idle for several years but will be immediately put in shape for operation, probably on an enlarged basis.

The General Porcelain Company, East Liverpool, Ohio, maker of electrical porcelain goods, will locate in Parkersburg, W. Va., where the company proposes to consolidate in one large plant its present factories located in several cities. It is stated that the company will erect a large main building 300 x 500 ft., of heavy mill construction.

The closing meeting of the Associated Foundry Foremen of Philadelphia, prior to the usual summer recess, was held in that city June 11. Under general discussion the question as to the strain which caused the Liberty Bell to crack was debated at length. The next regular meeting will be held September 10.

The Wright Wrench & Forging Company, Canton, Ohio, has made a number of additions to its plant in the way of buildings and equipment, including a 600-ton steam hydraulic forging press. The company is now prepared to furnish various kinds of forgings promptly, as well as scientifically heat treat all alloy steels.

A meeting of the stockholders of the Wheeling Sheet & Tin Plate Company has been called for June 26 at Wheeling, W. Va., to consider the adoption of a resolution to increase the number of shares of stock from 7500 to 10,000 at \$100 par value, thus making the capital stock \$1,000,000 instead of \$750,000.

The Western Drop Forge Company, Marion, Ind., is building a large addition to its plant, which is to be used for manufacturing purposes. Heavy forging equipment is now being installed and the company expects to have the new department in operation about July 1.

Personal

C. A. Coffin resigned June 16 as president of the General Electric Company and was elected chairman of the board of directors. He is succeeded as president by E. W. Rice, Jr., formerly vice-president. Mr. Rice has been connected with the General Electric Company or its constituent companies for the last 31 years.

G. A. Reinhardt, assistant in metallurgy and metallography at Harvard University, who was formerly associated with Crowell & Murray and the Cleveland Furnace Company, has been appointed metallurgist of the Youngstown Sheet & Tube Company.

Of the nine persons who will constitute the Industrial Commission, President Wilson has thus far selected five, as follows: S. Thurston Ballard, mill operator of Louisville, Ky., and Frederick A. Delano, Wabash Railroad, to represent employers of labor; John R. Lennon, Peoria, Ill., treasurer American Federation of Labor, to represent labor; Frank P. Walsh, lawyer, Kansas City, Mo., and Mrs. J. Borden Harriman, Mount Kisco, N. Y., to represent the general public. The commission as finally constituted will have three members of each of the above classes.

J. F. Weeks has resigned from the engineering department of the American Mfg. Company in order to become associated with C. S. Weeks in conducting business as mechanical and consulting engineers, which will be under the name of Weeks & Weeks, with office at 50 Broadway, New York.

Harry M. Rein, for two years chief draftsman of the Republic Rubber Company, Youngstown, Ohio, has resigned his position, and on July 1 will become connected with the Youngstown Foundry & Machine Company, having charge of the designing of special machinery in the manufacture of which the company proposes to engage, and will also act as assistant to F. A. Williams, vice-president, looking after sales. Mr. Rein has had some experience in rolling mill work, having been connected with the Ohio works of the Carnegie Steel Company and also with the William Tod Company at Youngstown.

Robert R. Barringer, formerly of the Georgia Supply Company, Tampa, Florida, has become sales manager of the Gulf Iron Works, Inc., Tampa, in which he has purchased an interest. The company operates a foundry and machine shop.

William J. Buttfield has been elected president of the Vulcan Detinning Company, succeeding E. E. Spiegelberg who resigned. George F. Eldredge, B. Nicoll & Co., New York, has been made vice-president.

Joseph D. Morten, formerly with Walter Wallingford & Co., has joined the sales force of the Domhoff & Joyce Company, Cincinnati, Ohio.

George T. Bacon has been appointed general manager of the Owego Bridge Company, Owego, N. Y.

John M. Carmody, formerly shop superintendent for Joseph T. Ryerson & Son, Chicago, and more recently chief inspector at Gary, Ind., for Robert W. Hunt & Co., engineers, sails June 21 to accept a position as assistant superintendent of the American Steel Company of Cuba at Havana.

Oliver W. Hull, formerly associated with the Hitch-cock Publications of Chicago as western advertising manager, and especially known in machinery circles, has joined the Chamberlin Company, technical publicity, Detroit, Mich. William M. Chamberlin, who went to Detroit in 1905 as advertising manager for the Wright Mfg. Company, organized the Chamberlin Company in 1911 and now occupies large offices in the new Free Press Building.

Harry Humphrey, general manager of the plant of the Whitaker-Glessner Company at Martins Ferry, Ohio, has been transferred to Los Angeles, Cal., to look after the interests of the company in the West. He was succeeded at Martins Ferry by W. W. Holloway.

I. H. Cohn, former vice-president and general manager of the National Iron & Steel Company at Houston, Texas, and St. Louis, Mo., has sold his interest in that company to J. M. West and J. R. Cohn, and under the agreement of sale will continue in business at St. Louis, retaining the same offices, namely, 1034 and 1035 Pierce Building. He has launched a new company, known as the National Steel

Rail Company, for the purpose of handling new and relaying rails, together with all accessories. The National Iron & Steel Company will now maintain offices only at Houston, Texas, and continue operations from that point.

John Kurn, for some years superintendent of the tube mills of the Allegheny Steel Company at Brackenridge, Pa., has resigned to retire from active business. T. H. Clay succeeds him.

W. J. Nugent, Jr., has assumed the position of superintendent of the Sivyer Steel Casting Company, Milwaukee, He has been engineer of production of the Indiana Harbor plant of the American Steel Foundries.

Thomas Diamond, a practical pattern-maker, has been appointed instructor in charge of pre-vocational work in the Milwaukee School of Trades for Boys. He is a native of Scotland, where he studied in the vocational schools of the country.

L. H. Atkinson, rail sales agent for the Bethlehem Steel Company, recently sailed for Europe.

President E. P. Thomas, of the United States Steel Products Company, New York, recently sailed for Europe.

R. M. Fry has been appointed general manager of the Orient Coke Company, Uniontown, Pa., to succeed O. W. Kennedy, deceased.

George A. Mason, assistant general manager of sales of the wire department of the Jones & Laughlin Steel Company, Pittsburgh, sailed for Europe June 19, to be gone three months.

H. H. Althouse, formerly chief engineer of the Erie Railroad, has gone into business as a consulting engineer with offices at 172 Fulton street, New York. He will devote himself to general engineering, but specialize in railroads, coal and ore plants and the elimination of grade crossings.

President James A. Farrell, of the United States Steel Corporation, made the presentation speech in the delivery of a friendship cup to Dr. Lauro Feverianao Muller, special ambassador from Brazil to the United States, at the Hotel Knickerbocker, New York City, June 17.

Obituary

Andrew S Crozier, of the New York office of the American Steel Foundries, where he held the position of sales agent, died suddenly from heart disease, June 14, while attending the convention of the Master Mechanics and Car Builders, Atlantic City, N. J. He was 50 years of age. Early in the day he had seemed to be in his usual good health and toward evening went to his room in the Marlborough-Blenheim to dress for a dinner engagement and died there. Mr. Crozier had been connected with the American Steel Castings Company and its successor, the American Steel Foundries, for 16 years and was highly regarded by the officers of his company for his pleasing personality and capacity for making friends as well as for his intimate knowledge of the company's business. He was born at Rockdale, Pa., and never married. He was a member of the Machinery Club of the City of New York, the Railroad Club of New York, the New England Railway Club and of other organizations.

JOSEPH B. JONES, traffic manager of the Wheeling Mold & Foundry Company, Wheeling, W. Va., died at his home in Martins Ferry, Ohio, June 10, after an operation, aged 25 years.

JOHN S. ORAM, manufacturer of stave, heading and barrel machinery, Cleveland, Ohio, died June 15 of heart failure at Ilfracombe, England, aged 66 years. He was born in England but spent most of his life in Cleveland. He was a member of the Cleveland branch of the National Metal Trade Association and of the Cleveland Chamber of Commerce.

The district of Ardlethan, about 350 miles west of Sydney, Australia, is reported to be developing rich deposits of tin. Some 12 companies have been formed, and one of them has already been able to declare a dividend from the tin it has mined. The London Economist states that the Stock Exchange of Sydney is very much excited over the developments in the new field.

Pittsburgh and Vicinity Business Notes

The Allegheny Steel Company, Pittsburgh, has placed a contract with the Pittsburgh office of the General Electric Company for a 1000-kw low-pressure turbine direct connected to a General Electric direct-current generator. It will be used to supply current for the operation of electrically driven equipment in the plant of the company at Brackenridge, Pa. A contract has also been placed with the Westinghouse Electric & Mfg. Company for a condensing outfit to be used in connection with the turbogenerator set.

The Cleveland Pneumatic Tool Company, Cleveland, Ohio, manufacturer of a full line of sand hammers, chipping and riveting hammers, air compressors and pneumatic grinders, will shortly open a Pittsburgh office to be in charge of J. T. Conley, at present connected with the New York office of the company.

R. A. Rowland, Pittsburgh representative of the Detroit Metal Products Company, Detroit, Mich., has secured a contract from the Pittsburgh Crucible Steel Company for 200,000 sq ft. of metal sash for extensions to its plant at Midland, Pa.; with the Syracuse Crucible Steel Company, Syracuse, N. Y., for 100,000 sq. ft. of sash, and with the Pennsylvania Rubber Company, Jeannette, Pa., for 30,000 sq. ft. for additional buildings in course of erection.

Stockholders of the Wheeling Sheet & Tin Plate Company, now building a 10-mill tin plate plant at Yorkville, Ohio, across the river from Wheeling, will meet June 20 to vote on a proposition to increase the capital from \$750,000 to \$1,000,000, which is simply carrying out the original incorporation plans. Isaac M. Scott, formerly president of the La Belle Iron Works, is president of the Wheeling Sheet & Tin Plate Company, and F. W. Henderson of Wheeling is secretary.

The Westinghouse Electric & Mfg. Company, East Pittsburgh, has recently received a large number of orders for electric power plant equipment for street railroad and interurban electric railroad companies as well as power companies throughout the country. Among these orders the most important is one received through Stone & Webster for the Blackstone Valley Gas & Electric Company which calls for a 12,850 kva turbogenerator and three 4300 kva transformers.

The Bessemer Motor Truck Company, Grove City, Pa., is in the market for an air compressor with a capacity of 200 cu. ft. per minute, 200 lb. pressure, also a pneumatic hammer to handle ½-in. rivets and a ½-in. pneumatic drill. The company has increased its capital from \$100,000 to \$300,000 and will use the additional money for extensions to its plant.

On June 10 the plant of the West Leechburg Steel Company. West Leechburg, Pa., was closed down in all departments on account of a few of the men making demands and striking for increases in wages and changes in working conditions which were regarded unreasonable. June 17 the plant was re-opened and the company expects to have it in full operation again within a short time, as the majority of the employees are fully satisfied with working conditions. The company manufactures cold rolled strip steel and other cold rolled specialties.

The recent rush order secured by the Riter-Conley Mfg. Company, Pittsburgh, for 1600 ft. of riveted steel water pipe for the Los Angeles water system was for pipe 10 ft. in diameter instead of 10 in.

The cold-rolled steel plant of the Superior Steel Company at Carnegie, Pa., which has been closed for some time on account of labor troubles, was put in partial operation on Wednesday, June 18, and the company expects shortly to have its works in full operation.

Three of the six 100-ton furnaces in the new open-hearth steel plant of the Youngstown Sheet & Tube Company, Youngstown, Ohio, have been in operation for some weeks and are working not only satisfactorily but to their rated capacity. In 24 hours recently the three furnaces turned out 601 tons. The company advises that it expects its new D blast furnace to be turned over to it by the contractors so that it can be blown in not later than August I.

Western Amalgamated Puddling Scale Settled

After a conference lasting nearly a week between representatives of the Western Bar Iron Association and the wage committee of the Amalgamated Association at West Baden, Ind., a settlement was reached late in the night of June 14. It was decided to continue the base rate for puddling as it stands now up to a 1.25c. card, as follows:

																													W	Vage rate	
																														\$5.25	Ī
1.05c.	bar	iron	*	×			0 6	8	*	8		8 1				10	9					 . 6	8		,			 		5.40	
1.10c.	bar	iron		8						*	2		 	*	ė		*	 				 . *		·			. ,	 		5.55	
1.15c.	bar	iron								0			 		0		0	 		0	0					× 1		 		5.70	
1.20c.	bar	iron		0									 · v			R	×	 	×											5.85	
1.25c.																														6.00	

Under the old scale, when bar iron reached 1.35c, the wage advance was 15c. per ton, but under the terms of the scale just agreed upon the advance is 20c, on each advance of 5/10c, in the bar iron card; in other words, when iron bars reach 1.50c., puddling will be \$7 a ton. It is understood that the finishers received a slight advance in wages, but not as much as demanded.

On Monday, June 16, the wage committee of the Amalgamated Association for sheet and tin plate mills went into session with independent sheet and tin mills at West Baden that sign the scale, but a settlement has not yet been reached. In view of the uncertain outlook for both sheets and tin plate, the manufacturers will strongly oppose any advance in wages.

Garland Sand Blast Patent Upheld .- The Garland patent relating to treatment and enameling of metal surfaces, and particularly the interior surface of metal pipes, commonly known as the Garland sand-blasting patent, was sustained on June 3 by the United States Circuit Court of Appeals. The patent is held by the Safety-Armorite Conduit Company, Pittsburgh, through assignment. The growing use of rigid steel pipe for electrical conduit purposes has brought about more care and supervision on the part of the National Board of Fire Underwriters, only perfectly clean pipe being approved. It is difficult to remove from the interior of iron or steel pipe all silicates or mill scale, and the method of the patent in suit has proved economical and satisfactory. Where scale is permitted to remain on the interior surface of conduit pipe there is danger of its sharp edges abrading and cutting through the insulation of the electric wires.

Swedish Iron Ore and Old Age Pensions.—It has already been noted in these columns that the Grangesberg-Oxclosund Iron Ore Company will turn out during the 20 years ending with 1932 no less than 31,000,000 tons more of Swedish iron ore than was anticipated by the agreement made with the government in 1907. A bill has been introduced in the Swedish Parliament whereby the profits derived from the additional output shall be divided between the company and the state. This is calculated to yield an income to the state of several millions of dollars which it is proposed shall form a fund for an old age and invalid pension scheme in Sweden.

Cast-Iron Tanks.—An inquiry has been received for the address of some manufacturer from whom cast-iron plates from I to 2½ ft. square can be procured for making tanks. It is stated that the plates have flanged machined edges to enable them to be bolted together to form tanks of any desired dimensions. The information should be forwarded to this office.

The Bureau of Standards, Washington, D. C., soon after July I will begin an inspection of railroad scales, starting with some of the scales of the Eastern roads. This test will be made as the result of complaints from shippers as to the weights charged for by railroads, and which, it is stated, have drawn attention to the necessity for some governmental supervision over railroad track scales as well as scales used by shippers doing an interstate business.

Our foreign trade continues on an exceedingly favorable basis. Exports of merchandise in May reached a total value of \$194,593,071 against imports valued at \$133,-466,450, making the excess of exports \$61,121,621. The excess of exports in May last year was \$19,682,172.

Chairman Gary and the Subsidiary Companies

(Continued from page 1495)

Object of the Steel Corporation Merger

It was Mr. Bacon who collaborated with Judge Gary in bringing about the merger of the Carnegie with the Federal Steel Company, and the acquisition of the other plants that went into the greater combination. Asked by R. V. Lindabury, counsel for the Steel Corporation, what was the object of the merger, Mr. Bacon said:

The object to be obtained was the creation of a great new steel company, based upon the Federal, which would be able by the ownership of its raw materials, by control of its own rail and lake transportation, and by the ownership of finishing mills of all descriptions, both in the East and the West, to manufacture every kind of iron and steel, and, by reason largely of its ability to reduce the cost of production, to sell its products to the best advan-

age in every market of the world.

Mr. Morgan believed that if he could take part in the formation of such a company, it would be the greatest and crowning achievement of his business career. He believed that the effect of such a creation would be, upon the whole industrial future and the individual life of this country, of tremendous beneficial effect, convinced as he was by Mr. Schwab and the other experts that almost inconceivable results could be obtained in the way of lowering the cost of production of iron and steel, that such a company would bring more good into our whole national life, constituting, as it did, the greatest single factor in the great constructive work of the country, than could possibly be attained in any other way. attained in any other way.

His first great object was, by reason of the decrease in the cost of production, to make it possible to so improve the condition of labor by increasing wages and bettering conditions, and by enabling the consumer always to depend upon stability of prices, to bring about a new condition of things

dition of things

Those, briefly, were the ideals and ambitions of Mr.
Morgan in forming the United States Steel Corporation.
Nothing was so far from Mr. Morgan's desire as the possibility of creating anything which approached a monopoly or could in the slightest degree restrain trade.

Q. Did you or Mr. Morgan take part in the organization of the Steel Corporation or in the acquisition of the Corporation or in the acquisition of the steel Corporation.

Carnegie properties in order to prevent the building of tube works at Conneaut by Carnegie?

A. Certainly not. The contemplated tube plant was

never mentioned as a factor of the slightest importance in the negotiations.

Policy Toward Employees and Competitors

Mr. Bacon has been at various times a director and a member of the finance committee of the Steel Corporation, and Mr. Lindabury questioned him as to its actual policy in respect to employees and competitors. He replied:

One of the first things considered was some plan of bringing about better conditions of labor, some plan of co-operation and participation in the benefits and profits of the company, which was considered the only way prac-tically of helping to solve the relations of capital and labor.

Mr. Bacon added that legitimate competition had steadily increased since the Steel Corporation was formed as a result of Judge Gary's policy of fair treatment of competitors. He said:

Judge Gary, from the very beginning, tried to enforce fair dealing as the only way in which stability of prices could be maintained. He preached and practiced the fairest kind of competition, keeping competitors informed as much as he could of all conditions in the steel industry. By doing so he has acquired a degree of confidence that never existed before among competitors.

Judge Gary's policy, Mr. Bacon said, was supported by Mr. Morgan and by the directors and the finance commit-

tee of the Steel Corporation.

Mr. Bacon was cross-examined by Henry E. Colton, who asked about the pools which were admittedly in existence for a time after the Steel Corporation was formed, but were finally brought to an end by Judge Gary. Mr. Bacon said that, although a member of the finance committee, he had no knowledge of the existence of any

"If any existed," he said, "it was contrary to the policy

of the Steel Corporation."

"Was it contrary to the policy of Mr. Schwab?" asked Mr. Colton.

Pittsburgh & "Probably not," admitted Mr. Bacon,

"Or to the policy of Mr. Corey?"

"Probably not." "Or Mr. Frick?"

"I can't speak for Mr. Frick," said Mr. Bacon, "but I can say that Judge Gary was opposed to pools."

Comptroller Filbert Verifies Farrell's Figures

William J. Filbert, comptroller of the Steel Corporation, testified for the defense on Monday, June 16. He said the total wages paid from the beginning of operations April 1, 1901, to December 31, 1912, were \$1,659,944,-622; taxes amounted to \$66,579,789; interest on mortgages and purchase obligations, \$377,109,488, and dividends on Steel Corporation stock in the hands of the public, inter-company dividends not included, were \$495,-196,490.

In 1911 the Steel Corporation spent \$1,276,752 on sanitation and welfare, and in 1912 it spent \$1,058,243. dent prevention and safety devices cost \$747,469 in 1911 and \$614,367 in 1912. When the voluntary pension system was established \$2,000,000 was set aside for permanent investment, in addition to Andrew Carnegie's \$4,000,000, and \$163,018 has been supplied for working capital and \$238,780 to meet deficiencies. The voluntary accident relief plan has cost in three years \$5,304,321.

Under the employees' stock subscription plan \$30,506,-400 par value of preferred and \$10,000,600 of common have been bought on the instalment plan by 32,448 employees.

What the Government Terms "Hearsay" Evidence

The chief purpose of Mr. Filbert's testimony was to verify statistics presented by President James A. Farrell when he was on the witness stand, in relation to the growth of foreign trade, the declining percentage of the country's output controlled by the Steel Corporation, and other matters. Mr. Filbert said the figures had been compiled in his office, most of them by himself, but Judge Dickinson, counsel for the Government, still objected to them. Figures of output, Mr. Filbert said, were made up from reports to him by the controllers and accountants of the subsidiary companies.

"Then they are based on hearsay," declared Judge

Dickinson.

"If official reports made in the course of business by those who are required to make them to me are hearsay, then my figures are based on hearsay."

Judge Dickinson also objected that in calculating the percentage of output that of the independent manufactur-

ers had been taken from trade publications.

"These same figures from the same source have been introduced by the Government in this case," retorted Mr. Filbert.

"Are you sure of that?" asked Judge Dickinson, du-biously. Mr. Filbert said he was. It developed also that counsel for the Steel Corporation had objected to them at the time just as vigorously as Judge Dickinson has done. The same figures have thus been put in by both sides and both sides have objected to them.

Systematizing of Cost Sheets

President Farrell had said that one of the chief objects in organizing the Steel Corporation was to effect economy and cut manufacturing costs, and as evidence of this told how comparative cost sheets for the various factories were made up periodically and sent to the mill superintendents. Each superintendent tried to reach the top of the list, and if the costs of a particular mill were abnormally high the attention of the general officers were drawn

Mr. Filbert told in detail of this system, which, he said, was started as soon as the Steel Corporation began business. It is now getting out 50 monthly cost statements. In connection with blast furnaces alone, 8000 items appear on these sheets, which are sent to all the subsidiaries.

Mr. Filbert also reinforced the testimony of E. H. Gary as to the policy of the Steel Corporation in giving publicity to its affairs and as to the protracted investigation of its operations made by the Commissioner of Corporations without adverse criticism resulting. The investigation was begun by James R. Garfield in 1906 and continued for four years. Thousands of pages of records were furnished to the Government, extra clerks being employed for the purpose, and the books were thrown open for their verification by Government accountants.

In 1910 the Government demanded further information, which took nearly a year to compile, and after a lull in 1911 more reports were called for and furnished, after

six months' work. These went to the Bureau of Labor and other departments and to the Stanley Committee. Up to 1910 this work had cost the Steel Corporation \$200,000.

Over 100,000 copies of the annual report are distributed each year, Mr. Filbert said, many Government officials and members of Congress being on the mailing list.

Steel Output in 1912 Far Beyond Any Record

A Total of 31,251,303 Tons of Ingots and Castings, or 7,575,197 Tons More than in 1911—Basic Steel 62 Per Cent.

The Bureau of Statistics of the American Iron and Steel Institute, William G. Gray, statistician, has received from the manufacturers statistics of the production of all kinds of steel ingots and castings in the United States in 1912. It has been necessary to estimate the output of a few plants. The production of ingots and castings by all processes reached the remarkable total of 31,251,303 gross tons, against 23,676,106 tons in 1911, an increase of 7,575,197 tons, or almost 32 per cent. The year of next largest production was 1910, with a total of 26,094,919 tons. Of the production in 1912 30,284,682 tons were ingots and 966,621 tons castings, against 23,029,479 tons of ingots and 646,627 tons of castings in 1911.

It is noteworthy that the production of open-hearth steel was more than double that of Bessemer steel in 1912, the total of the former being 20,780,723 tons (19,909,875 tons of ingots and 870,848 tons of castings), while of Bessemer steel the total was 10,327,901 tons (10,239,151 tons of ingots and 68,750 tons of castings). The production of basic open-hearth steel amounted to 19,197,504 tons of ingots and 443,998 tons of castings while the production of acid open-hearth steel was 712,371 tons of ingots and 426,850 tons of castings.

Bessemer Steel

The production of Bessemer steel ingots and castings in 1912, which was 10,327,901 tons, compares with 7,947,-854 tons in 1911, an increase of 2,380,047 tons or over 29.9 per cent. The 1912 output was 1,947,929 tons less than in 1906 while the maximum production of 12.275,830 tons was reached. Of the total production last year 33,555 tons was by the Tropenas process and 33,433 tons by other modifications of the standard Bessemer process. The following table gives the production by States of Bessemer steel ingots and castings for the past six years, in gross tons:

Open-Hearth Steel

The total production of open-hearth steel ingots and direct castings in 1912 amounted to 20,780,723 tons, against 15,598,650 tons in 1911, an increase of 5,182,073 tons, or over 33.2 per cent. In 1908 the production of open-hearth steel for the first time exceeded the production of Bessemer steel, the excess amounting to 1,719,974 tons. In 1912 the output of open-hearth steel exceeded the output of Bessemer steel by 10,452,822 tons, or over 101.2 per cent. The table at the bottom of the page gives the production of open-hearth steel ingots and castings by States in the last six years in gross tons.

It is estimated that about 573,880 tons of open-hearth steel ingots and direct castings which were treated with ferrovanadium, ferrotitanium, ferrochrome, nickel or other alloys are included in the total for 1912, as compared with about 296,065 tons in 1911. Of the total in 1912 about 493,195 tons were ingots and about 80,685 tons castings, while in 1911 about 255,333 tons were ingots and 40,732 tons castings.

BASIC AND ACID OPEN-HEARTH INGOTS

In 1912 a total of 19,641,502 tons of open-hearth steel was made by the basic process and 1,139,221 tons by the acid process, while in 1911 the production by the basic process amounted to 14,685,832 tons and by the acid process to 912,718 tons. The following table gives the production of basic and acid open-hearth ingots in 1912 by States, emitting direct castings:

New Eng., New York Pennsylvania Ohio, Indiana and l Md., W. Va., Ky., other States,	Illinois	. 11,466,172 . 5,476,822	Acid ingots 89,567 602,763 20,041 None	Total gross tons 917,924 12,068,935 5,496,863 1,426,153
Total for 1912		.19,197,504	712,371	19,909,875
Total for 1911		.14,419,306	608,153	15,027,459
1909 3,466,077 2,845,602 1,632,444	1910 3,314,053 2,975,750 1,693,053	1911 3,268,9 2,338,8	113	1912 4,285,673 3,157,928 1,559,576

Ohio Pennsylvania Illinois Other States	4,351,841 1,723,073	1908 1,955,446 2,106.382 1,237,747 817,180	1909 3,466,077 2,845,602 1,632,444 1,386,660	1910 3,314,053 2,975,750 1,693,053 1,429,916	1911 3,268,994 2,338,813 1,335,053 1,004,994	1912 4,285,673 3,157,928 1,559,576 1,324,724
Total	11,667,549	6,116,755	9,330,783	9,412,772	7,947,854	10,327,901

It is estimated that the figures for 1912 include 178,241 tons which were treated with ferrovanadium, ferrotitanium, ferrochrome, nickel or other alloys, this total being made up of 159,427 tons of ingots and 18,814 tons of direct castings.

Of the 68,750 tons of Bessemer castings made in 1912 Ohio contributed 6801 tons, Pennsylvania 10,523, Illinois 11,636, and other States 39,790 tons. Last year showed a high record for Bessemer castings, comparing with 57,101 tons in 1911, 58,335 tons in 1910, 33,814 tons in 1909, 20,559 tons in 1908 and 33,273 tons in 1907.

BASIC AND ACID OPEN-HEARTH CASTINGS
The following table gives the production of basic and acid open-hearth castings in 1912 by States:

New England, New York and New Jersey Pennsylvania Obio Indiana and Illinois W. Va., Mich., Wis., Col. and other States	115.313	Acid castings 45,479 248,984 36,414 42,127 53,846	gross tons 88,602 339,174 148,143 157,440 137,489
Total for 1912	443,998	426,850	870,848
Total for 1911	266,626	304,565	571,191

Production of Communication 1907	1908 158,417 350,348 5,322,229 28,689 470,407 525,171 167,299 483,104 19,615 311,450	Ingots and Castin 1909 257,392 618,117 9,400,287 35,285 477,365 1,424,452 783,957 1,052,572 28,512 415,997	193 in 1907-1912 1910 223,158 713,245 10,153,816 158,827 738,392 1,733,409 1,307,129 995,011 38,638 442,884	1911 189,879 679,152 9,594,914 128,309 636,625 1,721,549 1,394,520 801,624 27,993 424,085	1912 214,325 792,201 12,408,109 967,557 2,565,343 2,001,937 1,235,166 41,827 510,179
Total11,549,736	7,836,729	14,493,936	16,504,509	15.598.650	20,780,723

In 1912 there were 102 works which made open-hearth steel castings, of which 35 made castings by the basic but not by the acid process, 58 made castings by the acid but not by the basic process, and 9 made castings by both the basic and acid processes. In 1911 there were 98 works which made open-hearth steel castings.

DUPLEX STEEL

Included in the 19,641,502 tons of basic open-hearth steel ingots and castings produced in 1912 are 1,438,654 tons of duplex steel ingots and castings which were made from metal partly purified in Bessemer converters and finally purified in basic open-hearth steel furnaces. This steel was produced by seven works in four States as follows: Pennsylvania, 4; Maryland, 1; Alabama, 1; and Illinois, 1.

Crucible Steel

The production of crucible steel in 1912 amounted to 121,517 tons, against 97,653 tons in 1911, an increase of 23,864 tons, or over 24.4 per cent. The maximum production was reached in 1907, at 131,234 tons. The year of next largest production was 1906. Included in the total for 1912 are about 30,761 tons of crucible steel, which were treated with ferrovanadium, ferrotitanium, ferrochrome, or other alloys, of which about 27,553 tons were ingots and 3208 tons castings. In 1911 the production amounted to about 14,732 tons, of which about 13,330 tons were ingots and 1402 tons castings. The following table gives by States the production of crucible steel ingots and castings in 1912 in gross tons:

Pennsylvania Mass., Conn., New York and other S	62.074	Castings 1,613 18,937	63 687
Total for 1912	100,967	20,550	121,517
Total for 1911	83,623	14,030	97.653

Electric and Miscellaneous Steel

The production of steel by the electric process in 1912 amounted to 18,309 tons, as compared with 29,105 tons in 1911, a decrease of 10,796 tons. In 1910 the output was 52.141 tons, in 1909 it was 13,762 tons, and in 1908 it was 55 tons. Of the total output in 1912 about 14,147 tons were ingots and about 4162 tons castings, while in 1911 about 27,227 tons were ingots and about 1878 tons castings. In 1910 the output of ingots amounted to 50,821 tons and the output of castings to 1320 tons, while in 1909 the ingots produced amounted to 13,456 tons and the castings to 306 tons. In 1908 ingots only were made.

The total production of electric steel in 1912 includes about 9609 tons of steel ingots and castings which were treated with ferrovanadium, ferrotitanium and ferrochrome, etc., of which about 9217 tons were ingots and about 392 tons were castings. In 1911 the production of similarly treated steel amounted to about 6722 tons—about 6612 tons of ingots and about 110 tons of castings.

The production of steel in 1912 by various minor processes amounted to 2853 tons, against 2844 tons in 1911. Of the production in 1912 about 542 tons were ingots and about 2311 tons were direct castings.

Alloy Steel Ingots and Castings

The following table gives the approximate production in 1912 by processes of steel ingots and castings which were treated with ferrovanadium, ferrotitanium, ferrochrome, nickel, etc.:

Ingots	Castinga 18,814 75,590 5,095 3,208 402	gross tons 178,241 160,778 413,102 30,761 9,619
Total for 1912. 689,392 Total for 1911. 425,169 Total for 1910. 532,629 Total for 1909. 158,978	103,109 56,290 29,357 23,002	792,501 481,459 567,819 181,980

All Kinds of Steel Castings

In 1912 the production of all kinds of steel castings amounted to 966,621 tons, against 646,627 tons in 1911, an increase of 319,994 tons, or over 49.4 per cent. Of the total production in 1912 68,750 tons were made by the Bessemer process or some of its modifications, 870,848 tons by the open-hearth process, 20,550 tons by the crucible process, 4162 tons by the electric process, and 2311

tons by the various minor processes. Included in the total for 1912 are about 103,109 tons of steel castings which were treated with ferrovanadium, ferrotitanium, ferrochrome, nickel, or other alloys, of which about 18,814 tons were Bessemer, about 80,685 tons were openhearth, about 3,208 tons were crucible, about 392 tons were electric, and about 10 tons were miscellaneous. The following table gives by States the production by processes of all kinds of steel castings in 1912:

		Total astings,	
Resse-	Open- hearth	and all	tons
Mass., Conn., New York and N. J. 13,351 Pennsylvania 10,523 Del., Dist. of Col., Va., W. Va.,	88,602 339,174	4,026 4,445	105,979 354,142
Ky., Tenn., Ala., La., Texas and Ohio	171,408 169,588	6,163 4,850	192,363 189,206
Col., Utah, Ore., Wash., Cal. and Canal Zone, Panama	102,076	7,539	124,931
Total for 1912	870,848	27,023	966,621
Total for 191157,101	571,191	18,335	646,627

Plants Building and Projected

At the close of 1912 30 plants were equipped to make steel by the standard Bessemer process, 35 plants by the Tropenas process, and 37 plants by other modifications of the standard Bessemer process, while at the close of 1911 29 plants were equipped to make steel by the standard Bessemer process, 29 by the Tropenas process, and 31 by other modifications of the standard Bessemer process—a total of 102 for 1912 against 89. There were no Bessemer plants building at the close of 1912, but at the close of 1911 6 plants with 7 converters were under construction. In addition 13 plants were projected on December 31, 1912, as compared with 4 plants on December 31, 1912, as compared with 4 plants on December 31, 1912.

At the close of 1912 there were 182 completed openhearth steel plants, of which 157 were active during the year and 25 were idle. Of the total 113 were equipped to make basic steel, of which 101 were active during the year and 12 were idle, and 96 were equipped to make acid steel, of which 77 were active and 19 were idle. Some of the plants were equipped to make both basic and acid steel. Six plants were being built on December 31, 1912, Pennsylvania, 2; Maryland, 1; Ohio, 2; and Minnesota, 1. On the same date work had been suspended upon 3 partly erected plants. In addition 5 plants were projected-1 in the District of Columbia, 1 in West Virginia, 2 in Ohio, and I in Illinois. In 1912 four plants made steel by the cementation and other minor processes, as follows: Connecticut, 1; Pennsylvania, 1; Ohio, 1; and Indiana, 1. In 1911 five plants were active. On December 31, 1912, one plant for the manufacture of steel by a special process was being built in the State of Washington.

Whitworth Tool Steel Plant in Quebec

The Sir William Armstrong Whitworth & Co., Ltd., is about to build a tool steel making plant near Longueuil, Quebec, which is directly opposite Montreal on the St. Lawrence River. Sufficient land has been acquired to provide not only for present wants but for expected growth. M. J. Butler, formerly vice-president and general manager of the Dominion Steel Corporation, is consulting engineer. Plans are now in the hands of contractors and bids will be opened shortly. It is expected that the plant will be completed and ready for business in the spring of 1914.

Blast Furnace Gas Engines in Belgium.—Leon Greiner, in the Revue Universelle des Mines et de la Metallurgiè, states that there are 94 large gas engines at present in use at Belgian works, developing 128,700 hp. Belgian manufacturers have contributed 72 per cent. of these, or 93,000 hp. Of the total, 110,000 hp. is supplied with blast furnace gas and 18,700 with coke oven gas. The author states that gas engines using coke oven gas are making more rapid strides than those using blast furnace gas. He also figures that 232,000 hp. is available from Belgian !·last furnace gas, 48 per cent. of which is now being used, and 90,000 hp. from coke oven gas, 20 per cent. of which is now being utilized.

The Machinery Markets

Throughout the country conditions generally tend toward quiet and in some cities there is at the moment but little activity. In a few centers improvement is reported, but it is confined to certain lines only and due to special causes. In New York, trade has been slow and the fewer inquiries do not indicate any immediate improvement. The Philadelphia market continues irregular and practically all transactions are small. New England is taking advantage of a slight lull to make up stock, although many manufacturers are fully occupied filling orders. Cleveland has experienced little change, with orders calling for single tools almost exclusively and the demand none too good. The trade in Cincinnati is depending largely on the Government and railroads, although the latter are purchasing only what is strictly necessary; the export trade has slumped and second-hand machinery is dull. In Detroit there was a slight improvement last week because of quiet buying by automobile makers and the demand for second-hand tools is fair. Labor troubles have subsided in Milwaukee and inquiries are somewhat more plentiful. Business in St. Louis is reasonably satisfactory considering the prevailing sentiment in business. Power equipment sales lead in the Central South, where some general improvement is reported. The change from steam to electric power in many mills in the Birmingham district has made some lines active in that territory. In Texas oil developments are unusually active and there has been a corresponding demand for equipment. Crop conditions continue favorable in that State. While there is a fair activity of a miscellaneous kind on the Pacific coast, trade is not as lively as it was a month ago and a tendency to go slow is becoming apparent.

New York

NEW YORK, June 18, 1913.

The slightly better feeling displayed in the market last week was of short duration. At present representa-tives of the trade are unanimous in declaring that quiet prevails, and more than the season warrants. Several prospects heretofore referred to are still pending, the tendency is to hold back orders for the time being. Inquiries are fewer and of less importance. The quietness has been accentuated by the large number of managers and salesmen who went to Atlantic City in connection with the machinery exhibit of the Railway Sup-Association.

ply Manufacturers' Association.

The United States Government has continued to issue inquiries for its requirements of equipment for various navy yards. These include requests for bids as fol-

To Fe Opened June 24

One hydrogen compressor for Brooklyn, schedule 5562. One wet cylinder grinder for Norfolk, Va., schedule 5563. One wet cylinder grinder for Norfolk, Va., sc One emery grinder for Norfolk, schedule 5563,

To Be Opened July 8

One high pressure blower for Brooklyn, schedule 5577. One electric conveyor for Washington, D. C., schedule 5574. One upright drill for Portsmouth, N. H., schedule 5576.

One emery grinder for Portsmouth, schedule 5576. One engine lathe for Portsmouth, schedule 5576.

One geared, o en back, power press for Portsmouth, schedule 5575

One column shaper for Portsmouth, schedule 5576,

To Be Opened July 15

One motor-driven emery grinder for Mare Island, Cal., schedule,

One motor-driven screw cutting engine lathe for Mare Island, schedule 5679.

One drill press for Mare Island, schedule 5579.

One motor-driven column shape; for Mare Island, schedule 5579,

The Standard Oil Cloth Company, 320 Broadway, New York, is taking bids for a three-story factory building 390 x 450 ft. which it will erect at Peekskill,

N. Y.

The Steinbock Engineering Company, Peekskill, N. Y., is completing plans for an addition to be made to its

factory.

The Northern Tool Company, Inc., Utica, N. Y., has been organized with a capital stock of \$10,000 to take over the plant of the Northern Specialty Company, manufacturing self-closing water gauges, gauge cocks, valves, carbureters, small tools, etc. W. A. Vincent is president, Charles I. Williams treasurer and general manager and George V. Egglestoa secretary.

The Will & Baumer Company, Syracuse, N. Y., is building a one-story 71 x 142 ft. addition to its factory on Liverpool road. factory

on Liverpool road.

The Batavia & New York Woodworking Company, Batavia, N. Y., is receiving bids for an addition to its factory 108 x 722 ft., one and two stories.

Plans are being prepared for a power house 36 x 58 ft., one story, which the Onondaga County Home, at

Onondaga Hill, Syracuse, N. Y., will erect and equip. Address Frank X. Woon, purchasing agent, Onondaga County, Syracuse, N. Y.

The Rochester Bronze & Aluminum Company, Rochester, N. Y., has completed plans for a foundry building 60 x 87 ft., which it will erect on West Water

The New York State Railways, Rochester, has plans in progress for the erection and equipment of a car house to cost \$200,000 on Charlotte Boulevard, Greece, Y.-a suburb of Rochester. D. P. Falconer is en-

gineer of maintenance of way.

It is stated the Buffalo, Rochester & Pittsburgh Railway Company will be in the market soon for machine tools and other equipment for additions to be made to its car repair shop at Rochester. W. R. Shoop, Rochesits car repair shop at Rochester.

its car repair shop at Rochester. W. R. Shoop, Rochester, N. Y., is purchasing agent.

The Titan Copper Products Company, Buffalo, N. Y., has been incorporated for \$25,000, and arrangements are being completed for a manufacturing plant. The directors are Charles V. Slocum, of Buffalo, and Winthrop W. and Alexander N. Slocum, of Pittsburgh, Pa.

The American Bronze Company, 1415 Niagara street, Buffalo, has purchased a site for a new foundry at Arthur street and the Eric railroad, North Buffalo, N. Y., and is having plans prepared for a foundry build-

N. Y., and is having plans prepared for a foundry building which it will erect and equip this summer.

The American Trolley Wheel Company, Buffalo, has been incorporated with an authorized capitalization of \$1,000,000. The company will manufacture a new style of trolley wheel for which it holds patents. For the first six months they will be made under contract. After first six months they will be made under contract. After that time the company will erect and equip a factory in Buffalo. L. Bradley Dorr, 300 Jefferson street, Buffalo; Joseph Culp, Hamilton, Ont., and William S. Jackson, Indianapolis, Ind., are the directors.

The plant of the Friction Pulley & Machine Works, Sandy Hill, N. Y., manufacturer of special pulp and paper mill machinery, is equipping its plant with motors for electrical operation of its machinery.

The E. H. Nelson Bottling Works, Hornell, N. Y., is erecting a two-story and basement bottling plant 36 x 125 ft.

The Carroll Engine Company, Inc., Elmira, has been incorporated with a capital stock of \$250,000 and will manufacture engines and mechanical devices. A manufacturing plant is to be arranged for. J. D. Carroll, 410 East Third street, and Jos. Beach, Elmira, and E. M. Lowman, Wellsburg, N. Y., are the incorporators. porators.

The Buffalo Draft Gear Company, Inc., Buffalo, N. Y., has taken out incorporation papers to manufacture draft gears, car couplers. etc. Martin J. Ryan, 315 North Division street, and J. J. and T. J. Kanane are

The factory for the manufacture of grape juice and mince meat to be erected at Fredonia, N. Y., by the Cudahy Packing Company will be 112 x 192 ft. in dimensions, 3 stories, of steel frame and concrete construction, with brick panels.

Contract for the construction of a waterworks system at Honeoye Falls, N. Y., has been awarded to Bert Warren, of that place.

The Combo Engineering Company, Union Springs, N. Y., which was incorporated recently with a capitalization of \$20,000 has established and equipped a plant for the manufacture of steam power plant specialties, such as water-columns with alarms, electric signaling gauges, automatic regulators and recording mechanisms. Lewis Beebe is president and general manager; F. W. Shoemaker, secretary and treasurer. The American Steel Scythe Company, Port Byron, N. Y., has been incorporated by J. O. Bruce, 30 Lewis street, Auburn, N. Y., and G. A. Owlett and R. J. Benham, of the same place, and will equip a plant for the manufacture of scythes, hay and corn knives. The Normandie Silk Mills, Inc., Gloversville, N. Y., has filed articles of incorporation and will equip mills

The Normandie Silk Mills, Inc., Gloversville, N. Y., has filed articles of incorporation and will equip mills for the manufacture of silk fabrics. Thos. H. Hubbard, Geo. B. and Clinton V. Rowland are the incorporators. The Waterford Woolen Company, Waterford, N. Y., capitalized at \$20,000, has been incorporated and will

establish and equip a plant for the manufacture of wool,

control, shoddies, etc. O. A. and G. E. Saeltzer and H. B. Brooks are the incorporators.

The Corning Glass Works, Corning, N. Y., has let a contract to the Trussed Concrete Steel Company, De-

The Morrow Mig. Converse Steel Company, Detroit, for a five-story addition 100 x 120 ft.

The Bayer Company, Rensselaer, N. Y., has been incorporated to manufacture drugs and pharmacal supplies; capital stock \$750,000. The incorporators are A. V. Hupfer, Brooklyn; G. L. Kind, Hoboken, N. J., and E. S. Burke, New York City.

The Morrow Mfg. Company, Elmira, N. Y., will add to its plant in that city a one-story heat treatment building 100 x 250 ft. The contract for construction has

been let.

The Stanford Metal Railroad Tie Company, 208
Broad street, Elizabeth, N. J., has been incorporated
with a capital stock of \$100,000 to manufacture a railroad tie invented by Frank H. Stanford. The incorporators are W. DeWitt Stanford, William L. Brainard
and Edward G. Clayton.

New England

Boston, Mass., June 17, 1913.

seasonable let-up will be felt in the next two months, such as occurs with rare exception every summer. This year the temptation will be to attribute the condition wholly to other influences. These will be to blame in part, but they should not be compelled to bear the full onus. It is a fact that in a great majority of cases the man who expresses doubt as to the future answers, when questioned, and truthfully, that his own swers, when questioned, and truthfully, that his own works are operating either at full capacity or up to average production. No suggestion of cancellations is heard. In some cases business is better than it was a month ago, and the comparison with six months ago is equally favorable. Such is the experience of one of the large manufacturers of leather belting. Some builders of machine tools are taking advantage of a slight existing lull to increase their stocks. On the other hand certain lines of machinery, especially those for the manufacture of textiles, are dull. The universally expressed hope is that the tariff legislation be terminated quickly; that the readjustment already begun may be concluded that the readjustment already begun may be concluded

that the readjustment already begun may be concluded at the earliest possible date.

The supply of skilled labor in the metal lines still indicates that men are fully employed.

The factory of the Russell Mfg. Company, Greenfield Mass., which will manufacture screw plates, taps and dies, will be 80 x 140 ft., one story, with sawtooth roof and of slow-burning mill construction. The company will require lathes, milling machines, shapers, gang drilling machines, etc., with a great deal of special machinery, part of which will be purchased in the market and the remainder built by the owners. It is not determined whether electric or steam drive will be employed.

ployed.

The new factory addition which will be erected by the Whitney Mfg. Company, Hartford, Conn., manufacturer of transmission chains and machinery, will be 60

turer of transmission chains and machinery, will be 60 x 112 ft., four stories.

The Hartford Drop Forge Company, Hartford, Conn., which will establish a new industry in that city, will equip a shop for the manufacture of dies of all kinds for the trade, with a specialty of drop-forging dies, and will establish a shop for the manufacture of small and medium-size drop forgings. The plant will be located in the rear of 830 Windsor street. Charles F. Dickinson is the president and treasurer. A. W. Johnson vice-president, and Earl C. Abbe secretary.

The Pequonnock Foundry Company, Bridgeport,

Conn., will devote the addition to its plant to the finishing of castings. Ingersoll-Rand air compressors, air chippers and sand blast have been contracted for.

The Bausch Machine Tool Company, Springfield Mass., manufacturer of drilling machines, muti-spindle

and radial, is adding 50 per cent. to its capacity by the conversion of its foundry buildings into an erecting shop, tool room, stock room and a complete heat-treating department. The changes will release a considerable space in the present machine shops, which will be equipped with new machine tools. The present erecting shop will be devoted to the heavier machinery. The company's foundry is now combined in the new and modern works of the Quigley Foundry & Machine Company located nearby, which are now in full process of manufacture.

of manufacture.
The Clark Foundry Company, Rumford, Me., whose plant was burned June 5, as mentioned last week, has begun the erection of a building 40 x 80 ft., with ell 20

begun the erection of a building 40 x 80 ft., with ell 20 x 36 ft., and has purchased the required equipment.

The business of the Seymour Iron Foundry, Seymour, Conn., has been incorporated as the Seymour Iron Company, with capital stock of \$50,000, of which \$25,000 has been paid in. The incorporators are Edward A. Klatte, Louis E. Klatte, Charles W. Michaels and John Swain

The Canadian Pacific Railroad is erecting a new machine shop at McAdam, Me., which will cost \$100,000.

The Kerite Insulated Wire Company, Seymour,

Conn., will erect a one-story addition 60 x 70 ft., of con-

crete and steel.

The property of the Rhode Island Coal Company at Portsmouth, R. I., has been acquired at mortgage sale by Jeremiah A. Downs, Boston, of the house of Hayden & Stone. This mine of low-grade coal has been oper-ated for several years in connection with a briquetting

The Kendrick, Davis Company, Lebanon, N. H., manufacturer of electric motors and fans, will erect an addition to its works 48 x 56 ft., three stories. The improvements include the addition of two waterwheels.

The Fay & Scott Machine Company, Dexter, Me., manufacturer of machine tools and special machinery, will build an addition to its foundry to replace that portion of the structure recently destroyed by fire.

The Ball Bearing Shade Roller Company, Naugatuck, Conn., will erect a factory 41 x 129 ft., one story.

Clarence A. Cotton, Chicago, has been elected secretary of the Board of Trade, Providence, R. I.

The Hartford Foundry Corporation, Hartford, Conn., manufacturer of gray iron castings, has been placed in the hands of Edward C. Frisbie of that city as receiver.

Philadelphia

PHILADELPHIA, PA., June 17, 1913.

Irregularity still marks the movement of business in Irregularity still marks the movement of business in the machinery trades. Comparatively active periods are followed by dull ones and the general average for the month has not been very satisfactory. Large lot buying in machinery and tools is the exception, current business being confined to small transactions. Inquiry shows no marked improvement. Quite a fair volume of new business is pending as well as in sight in power plant equipment. The conventions of the Master Car Builders' and Master Mechanics' Associations at Atlantic City, N. J., have claimed a good share of the trade's attention the past week. Railroad buying continues spasmodic. The second-hand machinery market has been dull. Boilers and engines, both new and sectinues spasmodic. The second-hand machinery market has been dull. Boilers and engines, both new and second-hand, have been in fairly good demand. Steel casting plants are busy but some irregularity has developed in the operations of gray iron foundries.

F. W. Tunnell & Co. are having plans prepared by Day & Zimmerman, engineers, for a plant for the manufacture of fertilizers at Marcus Hook, Pa. A power plant and a large installation of conveying machinery will be included in the engineers' plans.

The Saxonia Dress Goods Company has started operations on a group of manufacturing huildings to be

will be included in the engineers' plans.

The Saxonia Dress Goods Company has started operations on a group of manufacturing buildings to be erected at Allegheny avenue and C street, for which James G. Dook & Co. have the contract. The buildings include a four-story, mill construction, 58 x 174 ft., a one-story weave shed, 97 x 165 ft. with an L 12 x 27 ft. and a one-story power house, 41 x 66 ft. The type of power equipment to be installed has not yet been decided upon cided upon.

Plans are in the course of preparation, it is stated, for a further large addition to be made to the plant of the Victor Talking Machine Company, Camden, N. J.,

which will include a six-story building. Details are not available

The Philadelphia Rapid Transit Company has taken city permits for the erection of its proposed car barn and repair shops at Fifty-eighth, Fifty-ninth, Vine and Callowhill streets. The main building, 437 x 490 ft., will be of concrete, two-stories.

The General Engineering Company has, it is reported, awarded the contract for a one-story machine shop addition, 67 x 157 ft., to its plant at Front and Kenilworth street, to F. W. Allison, contractor.

William H. Schultz has been given the contract for the building of a one-story garage, 53 x 145 ft., to be erected at Twentieth and Atlantic streets for Harry Alger.

Alger.

Day & Zimmerman, engineers, have completed plans for a one-story brick and steel power plant, 150 x 180 ft., to be built in Williamsburg, Pa., for the Utilities Corporation. Power equipment including boilers, turbines and condensers has already been provided for, but the engineers will take bids for pumps and coal handling machinery. The plant will represent a unit but the engineers will take bids for pumps and coal handling machinery. The plant will represent a unit of 4000 kw. capacity, the ultimate capacity of the plant being 16,000 kw. The same engineers are preparing plans for a new plant for the Diehl Mfg. Company, manufacturers of electric fans, motors, etc., which will be erected on York avenue, at City Line, between Elizabeth and Newark, N. J. The first unit of the plant will be a three-story building, 65 x 300 ft. A small power plant is to be provided for in the plans. The Lord Baltimore Truck Company, Frederick, Md., will erect a modern factory building for the manufacture of automobile trucks. John Luntz, Jr., is

facture of automobile trucks. John Luntz, Jr., is president of the company.

The Waynesburg Pressed Steel Company, Waynes-

The Waynesburg Pressed Steel Company, Waynesburg, Pa., manufacturer of solid shank, plain and hollow back shovels, states that the recent fire at its plant was only in the ventilators and operations were

resumed in less than 10 days.

The William H. Ottemiller Company, York, Pa., is erecting a new cap and set screw factory building, work on which is rapidly progressing.

Local contractors are estimating on a five-story factory building, including elevators, to be erected in Baltimore, Md., for Levinson & Zenitz of that city.

The Pennsylvania Sugar Company has let a contract for the erection of

for the erection of a corrugated-iron machine shop at its plant, Beach and Laurel streets. It is stated that machinery equipment will be required, but details are not available.

The Philadelphia Rapid Transit Company has filed plans with the Bureau of Building Inspection for a power house 54 x 96 ft. to be built at Thirteenth and Mifflin streets.

The Miller & Sons Company, hosiery manufacture is having plans prepared for a two-story factory building 100 x 156 ft. and a dye house 50 x 56 ft., to be erected at its plant at Fifty-third street and Westminster avenue.

Detroit

DETROIT, MICH., June 16, 1913.

A slight improvement has been noted in the machin-A slight improvement has been noted in the machinery demand the past week and there has been some quiet buying by the automobile industry. Sales may be characterized as fairly satisfactory in volume, but of little importance individually. It is expected that the Detroit United Railway will soon make some purchases for the equipment of its new shops in Highland Park. A fair amount of business is moving in second-hand machinery. Considerable activity is shown in the de-Considerable activity is shown in the demand for electrical equipment of all kinds. The general situation among the metal trades is satisfactory; plants are as a rule running at full capacity and little discontent over conditions is expressed. The labor troubles tent over conditions is expressed. The labor troubles recently reported are ironing themselves out and the becoming more settled. Construction work now being figured on is confined rather strictly to the smaller types of buildings.

The Schaefer-Freuzel Company, Detroit, has been

The Schaefer-Freuzel Company, Detroit, has been incorporated with \$50,000 capital stock to manufacture pumps, air compressors and other machinery. The incorporators are Joseph Schaefer, Arthur W. Freuzel and H. Roy Haberkorn.

The Insulating Materials Company, Detroit, has filed articles of incorporation giving its capital stock at \$50,000, and will engage in the manufacture of chemicals. Emil W. Keeler, Joseph W. Hunter and Walter G. Gates are the incorporators.

Dean & Sherk, Detroit, have acquired a factory building at Walker and Woodbridge streets and will equip it for the manufacture of thread.

The Carnation Motorette Company, Detroit, has been incorporated with \$50,000 capital stock to manufacture automobiles and auto parts. Henry A. Gardner, 209 East Chestnut street, Chicago, is the principal stockholder.

The Melvic Enameling Company, Detroit, has been incorporated with \$20,000 capital stock to manufacture and enamel metal machine and automobile parts. John D. Rockhill, Albert G. Owen and Frank W. Mell are

the incorporators.

The village of Grosse Pointe Park, a Detroit suburb, has voted to expend \$150,000 for the construction of a sewer system.

The Cutting Motor Car Company, Jackson, Mich., automobile manufacturer, has been adjudicated a bank-rupt, and upon the petition of creditors the Security

rupt, and upon the petition of creditors the Security Trust Company, Detroit, has been appointed receiver. The Muskegon-Ludington & Manistee Electric Company, capitalized at \$1,500,000, has filed articles of incorporation. The company will construct an interurban railroad from Muskegon to Manistee and will erect a number of power houses. The Michigan office of the company will be at Muskegon. The principal stockholders are Thomas Jacobs, Henry R. Baldwin and Sidney M. Weil, all of Chicago.

Harris Bros. & Co., Chicago, have acquired the machinery and supplies of the Flanders Mfg. Company, Pontiac, Mich., manufacturer of automobile parts, at receiver's sale. It is reported that the purchasers contemplate placing the plant in operation.

template placing the plant in operation.
The Chevrolet Motor Company, Flint, Mich., has acquired the business of the Little Motor Car Company, also of Flint. The Chevrolet company will operate both plants and some new equipment will be added in the near future.

The Oshkosh Excelsior Company, Oshkosh, Wis., will erect a branch plant at Maple Ridge, Mich.
The Evans Motor Car Company, Detroit, Mich., will build a plant at Nashville, Tenn., and not Beulah, as was incorrectly stated in The Iron Age of June 5.

Indianapolis

INDIANAPOLIS, IND., June 16, 1913.

The Stenotype Company, Owensboro, Ky., has signed a contract to move its plant to Mars Hill, the new industrial suburb of Indianapolis. The new site com-The company manufactures the stenoprises ten acres. type, or mechanical stenographer. It is capitalized at \$1,750,000 and began marketing the machines last September. It employs 350 people but will increase the number with the proposed enlarged plant. The main building will be reinforced concrete, 50 x 500 ft. W. S. Ireland, inventor of the machine, is president of the company; R. M. Bowen, vice-president and general manager, J. L. Matthews, St. Louis, is treasurer.

The Christie Machine Works has been incorporated.

in this city to operate a general machine shop. The directors are S. Christie, S. Kopf and J. A. Bawden.

The Fremont Dredging Company, Indianapolis, has increased its capital stock \$200,000.

The Indianapolis Board of Public Works will soon offer for sale for tone of iron in the ruins of one of the

The Indianapolis Board of Public Works will soon offer for sale 600 tons of iron in the ruins of one of the city bridges. It has been appraised at \$6.50 a ton.

The Schoentrup-Worden Woodworking Company's plant at Shelbyville, Ind., was burned June 10. Loss \$10,000; insurance \$7800.

The American Skidoo Swing Company, Huntington, Ind., has been incorporated with \$25,000 capital stock, to manufacture patent swings. The directors

ton, Ind., has been incorporated with \$25,000 capital stock, to manufacture patent swings. The directors are John W. Culp, Lewis Shinkel and Frank Strauss. The Standard Silo Company, Vincennes, Ind., has been incorporated, with \$50,000 capital stock, to manufacture silos. The directors are August F. Kiel, Jr.; H. C. Martindale and Benjamin Niehaus.

The Valparaiso Engineering Company, Valparaiso, Ind., has been incorporated with \$10,000 capital stock, to do construction work. The directors are I. C. Simpkins, C. C. Polk and E. W. Agar.

The bridge that the County Council of Tippecanoe is to build across the Wabash River at Lafayette, Ind., will be 740 feet long, with four piers and two abut-

is to build across the Wabash River at Lafayette, Ind., will be 740 feet long, with four piers and two abutments. It will be fifty-six feet wide. The contract is to be let July 1 and a bonus of \$20,000 will be given the contractor if the bridge is finished within a year. The plans were drawn by Prof. W. K. Hatt and Prof. Albert Smith of Purdue University, Lafayette, and Everett B. Vawter, West Lafayette.

The Hoosier Cut Stone Company, Bedford, Ind., has been incorporated, with \$30,000 capital stock, to quarry stone. The directors are M. J. Morgan, presi-

dent; John McMillan, vice-president and F. C. Greve, secretary. The company will build a mill.

The Miami County Council, meeting at Peru, Ind., has appropriated \$40,000 for a steel bridge across the

Wabash at Peru.

The Central States Bridge Company, Indianapolis, secured the contract for two bridges in Shelby County, at \$15,465.

Milwaukee

MILWAUKEE, WIS., June 16, 1913.

A slightly better feeling is observed in the machin-ery trade in the Milwaukee district, due to a noticeery trade in the Milwaukee district, due to a noticeable improvement in some lines. Inquiries are coming in at a more rapid rate than for several weeks and a few orders have been placed, which, while of no great importance, indicate that there are still buyers in the market. Labor conditions have improved particularly. The troubles which tied up a number of industries have been settled and there is no more fear that the influence would reach other trades. The second-hand machinery market is fairly active and a lot of stuff is being moved. The situation with regard to power units is unchanged, business continuing quiet.

The Wisconsin Bridge & Iron Company, Milwaukee, has taken over the contract for the superstructure of the new Algoma street bridge at Oshkosh, Wis., at \$86,440, the amount of the original award to the Joliet Bridge & Iron Company, Joliet, Ill., which arranged with the surety company to transfer the con-

the Joliet Bridge & Iron Company, Joliet, Ill., which arranged with the surety company to transfer the contract to the Milwaukee concern upon the death of its principal owner and directing hand, Mr. Morrison. The Mutual Brewing Company, a co-operative organization of retail liquor dealers, has purchased seven acres at Thirty-fifth and National avenues, Milwaukee, as a site for its proposed brewery plant. About \$250,000 will be expended before the end of 1913 in buildings and equipment. Edward G. Hundt is

The Union Machinery & Supply Company, Seattle, Wash., composed of C. E. Farnsworth, Sumner Prescott and other Wisconsin men formerly active in sim-Wash., composed of C. E. Farnsworth, Sumner Frescott and other Wisconsin men formerly active in similar lines in this State, has recently been awarded the contract for the full equipment of a \$1,000,000 sawmill being erected for the Puget Sound Mills & Timber Company, at Port Angeles, Wash. Included in the equipment is a 1500 hp. Nordberg twin Corliss engine, driving the complete mill equipment, with an 84-inch 3-ply belt. Four Prescott band and resaws and a 16 x for in gang are also included. Mr. Farnsworth formerly

3-ply belt. Four Prescot band and resaws and a 10 x 60 in. gang are also included. Mr. Farnsworth formerly resided at Fond du Lac, Wis., and Mr. Prescott at Marinette, Wis., and Menominee, Mich.

The Racine Foundry Company, Racine, is preparing for the construction of a pattern shop and storage room on Washington avenue, between Ninth and Touth avenues. Tenth avenues.

Tenth avenues.

A pattern shop has been established at Racine by W. A. Simanek and D. A. Cooper, expert pattern workers, under the name of Racine Pattern Works. Quarters have been fitted up at Frederick and Yout streets and wood and metal pattern work will be executed. Mr. Simanek was foreman of the pattern department of the Mitchell-Lewis Motor Company, Racine, while Mr. Cooper held a similar position with the Thos. B. Jeffery Company, at Kenosha.

The Modern Steel Structural Company, Waukesha, which is executing a number of contracts at the Head-of-the-Lakes, is contemplating the establishment of a

of-the-Lakes, is contemplating the establishment of a branch office, yard and shop at Superior. The present activity at Duluth and Superior, due to the establishment of many new and large industries, makes the district a fertile field.

Cleveland

CLEVELAND, OHIO, June 16, 1913.

The condition of the market shows little if any change. Sales by machinery houses are limited for the most part to scattering single tool orders and these are not any too plentiful. No inquiries of any size are being figured on. Some prospective purchassers are holding back, apparently awaiting developments in the industrial outlook. The recent light demand has enabled builders of some lines of machinery to make better deliveries than earlier in the year. The demand for second-hand machinery is not active.

The Toledo-Owens Glass Sand Company, Toledo, Ohio, has been organized with a capitalization of \$200,000 by interests connected with the Owens Bottle Machine Company and will build a large sand glass The condition of the market shows little if any

plant at Silica, near Toledo. It is stated that the company will at once begin the erection of a large plant including seven buildings of reinforced concrete, steel and brick, which will have a crushing capacity of 3000 tons daily. M. J. Owens is president and F. L. Geddes is secretary. The company's general offices are in the Nicholas Building, Toledo.

The Wise Furnace Company, Akron, Ohio, will enlarge its plant by the erection of two buildings, one a three-story structure to be used for manufacturing purposes, and the other a one-story building to be used as a storage and shipping department.

The Ohio Die & Tool Company, Toledo, maker of special machinery, will move to considerably larger quarters at Bancroft and Monroe streets. Some new machinery is being installed.

machinery is being installed.

The Diebold-Peters Company, Cleveland, has changed its name to the Peters Machine & Mfg. Com-

changed its name to the Peters Machine & Mfg. Company.

The Gordon Rubber Company, Canton, Ohio, has placed contracts for the erection of two new factory buildings. They will be one-story structures of brick, one 40 x 160 ft. and the other 40 x 245 ft.

Bids for the erection of a waterworks pumping station and a water purification plant in Painesville, Ohio, will be received July 8 by S. A. Haskell, director of public service. The contract will include pumps, piping, boilers, tanks and filter equipment. Plans are on file at the office of R. Winthrop Pratt, 708 Hippodrome Building, Cleveland.

The Commercial Auto Body & Mfg. Company, Cleveland, has been incorporated with a capitalization of \$50,000 by M. E. McManus, C. H. Knippenberg, F. L. Fuller, J. H. Orgill and J. E. Mathews.

Cincinnati

CINCINNATI, OHIO, June 17, 1913.

The machine tool trade is mainly depending on Government and railroad orders. Export business has experienced a slump, and the railroads are only making purchases of tools that are absolutely necessary for replacements, although there are several lists out that may develop into orders later on. Among these is one from the Cincinnati, Hamilton & Dayton Railroad Company. The Pennsylvania Railroad is also in the market for a number of machine tools, and it is reported that a list issued several months ago may be reported that a list issued several months ago may be

purchased at an early date. Second-hand machinery business is very dull, and there are no indications of an improvement in the near future.

The Cincinnati Business Men's Club held its annual outing at the Laughery Island Club June 11. Over 400 were present, including a number of manufacturers from peachy cities.

400 were present, including a number of manufacturers from nearby cities.

The name of the Phelps Iron & Steel Company, Cincinnati, has been changed to the Murdoch Coal Company. The new company will devote its attention principally to handling steam coal.

At a recent election held by the directors of the Triumph Electric & Ice Machine Company, Oakley, Cincinnati, the following officers were elected to serve for the ensuing year: President, J. C. Hobart; first vice-president, Edward Rawson; second vice-president, W. H. Jacob; third vice-president, Graham P. Hunt; secretary, J. S. Louis.

The Ideal Steel Wheel Company, Winton place, Cincinnati, is purchasing a number of machine tools, and will be in the market for a large sized radial drill in the near future.

in the near future.

The W. P. Callahan Company, Dayton, Ohio, manufacturer of cotton oil machinery, has increased its capital stock from \$400,000 to \$550,000. No additions

to its plant are contemplated.

The Safe Cabinet Company, Marietta, Ohio, will soon build a three-story concrete addition to its plant. Foreman & Putnam, Marietta, have the contract for

the proposed building.

J. B. Feemster, clerk of the board of trustees, Glendale, Ohio, a Cincinnati suburb, will open bids July 2 for a miscellaneous lot of waterworks equipment, including air compressors, electric motors and a water

tank.

The Gramont Traction Plow Company, Springfield, Ohio, has been incorporated with \$500,000 capital stock, to manufacture a patented tractor plow. It is reported that a factory will be built, and that the new company will make a special effort to obtain a fair share of export business. P. E. Montanus, president Springfield Machine Tool Company, is one of the principal incorporators. corporator

The Richardson Paper Company, Lockland, Ohio, is

making some additions to its plant. A number of mo-

s is included in the new equipment needed. The plant of the Kelly Nail & Iron Company, Iron-

now in full operation.

The Stedman Foundry & Machine Company, Aurora, Ind., is considering adding to its plant a pattern shop. Plans for the proposed building have not yet been made up.

The Dayton Engineering Laboratories, Dayton, Ohio, will soon erect a six-story plant on Madison street

The Hanna Paint Company, Columbus, Ohio, is taking bids on the construction of a large factory build-

Wheeling

WHEELING, W. VA., June 16, 1913.

Wheeling, W. Va., June 16, 1913.

The Naughton Drilling Company, Clarksburg, W. Va., has been incorporated with \$10,000 capital by A. F. Nay, Nellie Hays Nay and others of Clarksburg, W. Va.; Michael Naughton and Rachael Wiggs Naughton, of Cornwallis, W. Va.

The Ohio River Company, Wellsboro, W. Va., has been incorporated to mine coal and drill for oil. The incorporators are S. B. Cochrane, Elmer Hough, Robert Wheeler and others, of Wellsburg, W. Va.

The Co-operative Coal Company, Charleston, W. Va., has been incorporated with \$15,000 capital by T. C. Davis, F. W. Johnson, C. E. McCoy, W. H. King, G. V. Ramsey, of Charleston, W. Va.

The Producers' Company, of Chicago, has been incorporated, with a capital stock of \$150,000, to manufacture woolen and other articles. Incorporators are Berkeley Minor and Francis M. Payne, of Charleston, W. Va.; James R. Offield, Charles J. Schmidt and Frank L. Belknap, of Chicago.

The United States Window Glass Company, of Morgantown, W. Va., has been incorporated with \$600,000 capital by Walter A. Jones, Jos. L. Keener, A. Edward Hedgren and others.

A mortgage to insure payment of \$15,000,000 bonds

Hedgren and others.

A mortgage to insure payment of \$15,000,000 bonds was filed in the county's clerk's office at Hinton, W. Va., by the Virginian Power Company. The money will be expended in development of the power on New

The Central South

Louisville, Ky., June 17, 1913.

Business in this territory is looking up considerably, greater industrial activity having been manifested of late. The excellent crop reports recently made public have given business men renewed confidence, it seems, have given business men renewed confidence, it seems, and manufacturers are going ahead with plans for enlargements which had been held in abeyance. Power machinery is the leading item in sales at present, and boiler concerns have had all that they could do. Electrical equipment, especially motors, has been held back somewhat locally because of the fact that a merger of the leading central stations has been completed, which may have some effect on rates. This is causing consumers to defer changes in equipment to await the result of the new conditions. Conveying machinery is selling well, and there has been some call lately for machine tools in more than usual number.

is selling well, and there has been some call lately for machine tools in more than usual number.

The Kosmos Portland Cement Company, Paul Jones Building, Louisville, which, as recently announced, has been planning the enlargement of its plant at Kosmosdale, a suburb of Louisville, has completed plans for the improvement and has begun to let contracts. The capacity of the plant will be increased from 1200 to 3000 partels a day and the power installation doubled in capacity of the plant will be increased from 1200 to 3000 barrels a day and the power installation doubled in size. Contracts let so far include one for a Parson type turbine and generator to the Allis-Chalmers Company, which will also furnish the crushing equipment, a No. 12 Gates crusher to be installed; the Westinghouse Electric & Mfg. Company, motors; a Vulcan locomotive; a 75-ton Bucyrus steam shovel, and other minor items. The most important machinery yet to be bought is the conveying equipment, which will include both belt and screw conveyors. The Dugan Engineering Company, Equitable Building, Louisville, is designing and supervising the installation of the equipment.

The Louisville office of Fairbanks, Morse & Co. has sold a municipal lighting system to Cannelton, Ind., and it is now being installed.

The Louisville office of the Westinghouse Electric

& Mfg. Company will install generators in the new municipal lighting plant of Jasper, Ind. A 125 k. v. a. set and a 250 k. v. a. set will be provided. The Harrisburg Fleming Engine Company received the contract the engine.

A furniture factory is being equipped by the A. L. Kaercher Furniture Company, Twenty-second and Pirtle streets, Louisville. The concern will use electric

The Seelbach Hotel Company, Louisville, will be in the market for laundry machinery in the near future, as it will establish a new and larger laundry in connec-tion with the new power house which is now being installed.

The Realty Investment Company, Louisville, which The Realty Investment Company, Louisville, which has under construction a \$250,000 apartment building at Fourth and Ormsby avenues, will install two electric automatic elevators, and will also have its own power plant. Enough current will be generated to serve residences and adjoining buildings in that block.

E. D. Morton & Co., Louisville machinery dealers, have sold to the Louisville Railway Company a 26-in. drill manufactured by the Aurora Tool Works, Aurora, and

Ind

Inter-Southern Life Insurance The Inter-Southern Life Insurance Company, Louisville, which has taken over the lease of the Southern National Life on a site at Fourth and Market streets, will build a ten-story office and mercantile structure at a cost of \$150,000. James R. Duffin is president of the Inter-Southern.

The R. J. Reynolds Tobacco Company will erect a three-story brick warehouse at Lexington, Ky. Elevators and other equipment will be needed. Address Thomas H. Gray, resident manager, Lexington, Ky.

The Mowbray & Robinson Lumber Company, Cin-

The Mowbray & Robinson Lumber Company, Cincinnati, Ohio, which recently acquired a large tract of timber in Derry County, Ky., on the extension of the Lexington & Eastern Railroad, has advised that it is ready to begin the purchase of equipment for sawmills.

which are to be installed there.

Transylvania University, Lexington, Ky., will build a central heating and lighting plant, to serve all the buildings of the university, at a cost of \$50,000. R. H. Crossfield, president of the institution, has the matter

in charge.

The Terrell Distilling Company, Paducah, Ky., will rebuild the distillery recently destroyed by fire, according to a report from that city.

The City Council of Paducah, Ky., has under consideration appropriating \$9000 for the equipment of a new pumping station, which will require pumps, motors and other special apparatus. L. A. Washington is city

engineer.

The Sheffield Tool Steel Company, Covington, Ky., has been incorporated with \$10,000 capital stock by A. B. Herking, C. F. MacKinnon and Ben Biedenham. The Knott Mfg. Company, Tell City, Ind., is establishing its factory there after having started in Ft. Wayne, Ind. It manufactures lavatory supplies, and is contemplating increasing its output at the new location.

The Devany Ladder Company, Moline, Ill., is pre-paring to locate a factory at Nashville, Tenn. George

Devany is in charge of the proposition.

The R. E. Wood Lumber Company, Baltimore, Md., will establish a sawmill near Bristol, Tenn., and de-

A sawmill will be built at Harriman, Tenn., by W. A. Rockwell and B. F. Hamilton. The mill will have a capacity of 50,000 ft. of hardwood a day.

Greenville, Tenn., is planning a bond issue, the purpose of which is to finance the construction of a waterworks system. The mayor may be addressed for

The Blue Ridge Power Company, Memphis, Tenn., has been incorporated, with a capitalization of \$25,000 by James G. Johnson, W. M. Cox, C. E. Gore and E. N. Rogers. Rogers

Lenoir City, Tenn., has let a contract to J. B. Mc-Crary & Co., Atlanta, Ga., to install a system of water-works. The plant will cost \$40,000.

works. The plant will cost \$40,000.

The Scottsboro Light & Power Company, Scottsboro, Ala., is in the market for a dynamo.

J. H. Watkins, Monroe, La., is purchasing machinery for installation in a sawmill. A carriage, edger and other items will be needed.

William E. Benson, Benson, Ala., is in the market for sawmill equipment, including boiler and engine, for a plant which will manufacture 50,000 ft. of lumber a day.

The Preserved Tie Company, Kenova, W. Va. is planning the installation of equipment for obtaining by-products of sawmill waste through distillation. It

will need boilers, retorts and other distilling apparatus. L. Graham, Coldwater, Miss., has plans for the shment of a waterworks system.

C. L. Graham, Coldwater, Miss., has plans for the establishment of a waterworks system.

The Mobile Box Lumber Company will establish a plant at Crichton, Ala., for the manufacture of box shooks and material for interior trim.

The Ferguson & Palmer Company, Paducah, Ky., is planning the installation of a \$50,000 sawmill at Houlka, Miss. Earl Palmer, president of the company, may be addressed at Paducah.

St. Louis

St. Louis, Mo., June 16, 1913.

Conditions in the machine tool market continue Conditions in the machine tool market continue reasonably satisfactory, considering the general sentiment prevailing in business. The demand is, as usual, for single tools, with some replacement and some extension request, while second-hand tools are still in greater request than the supply on hand is sufficient to fill. Collections are reported fair and the inquiries coming in augur well for a continuance of the present tours of business. status of business.

The Forrest Lumber Company, Kansas City, Mo., has increased its capital stock from \$500,000 to \$1,000,000, and plans to utilize the increase in the extension of its business, including the enlargement of its

plants. The Missouri Engine Company, previously as organized at St. Louis, has incorporated with \$35,000 capital, preliminary, with these stockholders: A. E. Winklemeyer, Harry Bain and Hugo Lippert. It will proceed to the erection and equipment of its plant.

The Patterson-O'Brien Company, of Illinois, has been licensed to use \$150,000 of its \$1,250,000 capital in

Missouri, and will establish headquarters and a plant at St. Louis.

The Yourtee-Roberts Sand Company, Chester, Ill., has been incorporated with \$20,000 capital, by Livingston H. Yourtee, W. C. Roberts and E. B. Yourtee, and will equip a plant for developing sand and gravel de-

posits.

The Light & Development Company, St. Louis, has purchased the public service electric light and power plant at Marianna, Ark., operated by E. C. and John Horner, of Helena, Ark., and will improve its equipment, which comprises the street car system, water and light service, etc.

The Farmers' Elevator Company, Beckemeyer, Ill., has been incorporated with \$13,000 capital, by Herman Trapp, John Mahlandt and William Zinschlage, and will equip a grain elevator at once.

equip a grain elevator at once.

will equip a grain elevator at once.

The Hoopeston Gas Engine Company, Hoopeston, Ill., has been incorporated with \$15,000 capital by J. W. Alkire, F. E. Vaughn and E. W. Goldsberg.

The Rock River Pearl Button Company, Dixon, Ill., has been incorporated by C. S. Baker, Nate Merrill and R. H. Espy, and will equip a plant for the manufacture of buttons from shells.

The Chamber of Commerce, Monroe, La., announces that it is in the market for the establishment of a furniture factory and that it will offer special in-

of a furniture factory and that it will offer special in-

of a furniture factory and that it will offer special inducements therefor.

The Public Service Company of Oklahoma, Tulsa. Okla., has been incorporated by Fred W. Insull, of Oklahoma City: Martin J. and Samuel Insull of Chicago; Paul M. Galloway, of Tulsa, and Galen Grow. of Guthrie, with \$3,000,000 capital, to engage in the construction and operation of traction lines, power and light plants etc.

struction and operation of traction lines, power and light plants, etc.

The Dayton Hosiery Mill Company, Dayton, Tenn. is to be incorporated with \$75,000 capital, to establish an electrically driven plant which will require about \$30,000 worth of machinery.

The Columbus Tile Company, Columbus, Miss., has been incorporated with \$10,000 capital, by C. B. Hardy, W. C. Banks and others and will equip a plant for the manufacture of tile, brick, etc.

The plant of the Vale Brick Company, Kansas City, Mo., recently reported as incorporated, will cost about \$35,000 to equip. Geo. C. Stephens is president. The office is in the Bryant Building.

The Petrous Mfg. Company, of Biloxi, Miss., re-

office is in the Brvant Building.

The Petrous Mfg. Company, of Biloxi, Miss., recently noted as incorporated, will increase its capital from \$60,000 to \$100,000 for the purpose of enlarging its plans for the manufacture of concrete bricks.

The Farmers & Merchants Gin Company, Allen, Okla., has been incorporated with \$8,000 capital, by F. M. Moore, W. F. Robertson and A. A. Caldwell and will equip a cotton ginnery at once.

The Port Gin Company, Port. Okla., has been incorporated with \$8000 capital by J. E. McKillip, J. C.

Gold, Walter Waller, A. L. Thorpe and L. W. Matthews, and will equip a cotton ginnery in time to handle this season's crop.

The Valler & Spies Milling Company, St. Louis, has plans for the construction and equipment of a power plant to cost about \$8000, exclusive of building.

The Okmulgee Light & Power Company, Okmulgee, Okla., has plans for the increase of its light and power equipment.

power equipment.

power equipment.

The Lack Singletree Company, Paducah, Ky., has plans for the construction and equipment of a forging plant in connection with its factory.

The Dantzler Foundry & Machine Works, Gulfport, Miss., has been incorporated with \$15,000 capital by D. E. Morris, G. B. Dantzler and others.

The Novelty Foundry Company, Macon, Mo., has been incorporated with \$25,000 capital by A. B. Miller, I. A. Cole and E. E. Brock, and will equip a foundry and machine works plant at once.

The Citizens Ice & Public Utilities Company, Junction City, Ark., has been incorporated with \$25,000 capital by J. M. Brown, A. J. Reynolds, J. D. Proctor, R. G. Brown and others, to equip ice, electric and waterworks plants. waterworks plants.

Panama Ice Company, New Orleans, La., ganized, with George Mule as president, has acquired the plant at Cosmopolitan, and will install a 150-ton exhaust steam ice-making equipment under the direc-

The Sterling Lumber Company, Clio, Ark., has increased its capital from \$10,000 to \$100,000 for the purpose of extending its mill facilities and operations.

The Kern Company, Ltd., New Orleans, La., will equip a hardwood sawmill on timber property which it

The Marathon Lumber Company, Wausau, Wis., has completed arrangements for the equipment of a large plant at Laurel, Miss., on a 50,000-acre tract

recently bought.

A sawmill will be equipped at El Dorado, Ark., by
M. V. Rogers, of Elliott, Ark. The capacity has not

The Wentworth Land & Mining Company, Wentworth, Mo., recently reported incorporated, has completed its plans for the building of a mill and the development of zinc and lead property.

The St. Francis Levee Board of Marion, Ark., is in

The St. Francis Levee Board of Marion, Ark., is in the market for machinery to be used in the improvement of the levee system under the direction of B. G. Covington, of Memphis, Tenn., engineer.

Bids will be received at England, Ark., until July 7, for equipment, etc., for the construction of considerable levee work in the Pine Bayou District, under the direction of Dickinson & Watkins, of Memphis, Tenn.

The Mississippi Levee Commissioners will receive bids for equipment, etc., for the work of construction of a considerable amount of levees at and near Greenville, Miss., under the direction of W. J. Shackleford, chief engineer.

The Kansas City Heating Company, Kansas City.

chief engineer.

The Kansas City Heating Company, Kansas City, Mo., will build a heating plant, the equipment of which will cost about \$25,000.

The Black River Button Company, Corning, Ark., has plans for the equipment of a 100-machine button plant at Pocahontas, Ark.

The Farmers' Association of Ponchatoula, La., plans to construct a cane mill and a box factory.

The Grooms-Foretitch Naval Stores Company, Hattiesburg, Miss., has been organized by A. W. Harper, J. O. Gillespie and others, and will equip a distillery plant at once. plant at once

George Kilgen & Son, organ manufacturers of St. Louis, will build a considerable addition to their plant.

Louis, will build a considerable addition to their plant. The Manning Paint Company, Enid, Okla., incorporated by J. P. Cook, W. M. Manning, E. N. McKee and others, will equip a paint mill at once for early operation. Equipment will cost about \$5000.

The city of Clarendon. Ark., will expend about \$60.000 in the construction of sewerage system and water works under the direction of F. M. Kennedy.

A sewer system to cost about \$35,000 is to be equipped at Conway. Ark., under the direction of Joseph McCoppin, of Little Rock, Ark.

The Ox-Bow Bend Power Company, Tulsa, Okla., has been incorporated with \$100.000 capital by C. P. Chenault, L. D. Lewis, Floyd E. Lewis, J. O. Campbell and L. W. Mason and will equip a hydroelectric plant on the Arkansas River to develop 42.000 hp.

The city of Amite, La., is planning the installation of water works.

of water works.

The city of Jackson, Miss., has voted a bond issue of \$100,000 for the construction of a filtration plant in connection with the waterworks.

The Pontotoc Electric Light & Power Company, Pontotoc, Miss., is preparing plans for the equipment of a waterworks plant.

A waterworks plant is to be constructed at Owens-ville, Mo., with the proceeds of the \$12,000 bond issue recently voted there

The burned handle factory of Saile Bros., at Pocanta, Ark., will be rebuilt, the equipment to cost honta, about \$5000.

The sawmill and ginnery of J. O. Magee, Mt. Herman, La., are reported burned with a loss of \$12,000. They will be replaced.

They will be replaced.

The Terminal Oil Company's refining plant at New Orleans, La., was burned last week with a loss of \$60,000. The plant will be rebuilt.

The Oklahoma Gin Company's ginnery at Durant, Okla., was burned last week with a loss of \$15,000. It

will be rebuilt:

The Panama Rice Milling Company, New Orleans,
La., has been incorporated with \$20,000 capital at New
Orleans, La., by John S. Tallmage, William T. Hall and
John H. Barrow and will equip a rice mill.

The Southern Motor Company, Texarkana, Ark., incorporated with \$20,000 capital by K. M. Kelly, C. J.
Neef, and Andrew Bowden, will equip a plant for the

manufacture of motor trucks.

Birmingham

BIRMINGHAM, ALA., June 16, 1913.

Owing to the early introduction of hydroelectric current in the Birmingham district through the de-velopments on the Coosa River of the Alabama Power Company, changes in a number of mills and mines from steam to electric power are being made. The result has been a demand for electric appliances that will continue for some time. Activity is also reported in gasoline engines, owing to the preparation of ginning outfits to handle the coming cotton crop. General machinery trade conditions in Alabama and adjoining states are thoroughly satisfactory for this time of the year

The Jasper Oil & Fertilizer Company, Jasper, Ala., has been incorporated with a capital stock of \$16,000 and will establish an oil mill. J. M. Phillips, Jasper, is president, and C. W. Ashcraft, Florence, Ala., is

is president, and C. W. Ashcraft, Florence, Ala., is vice-president.

The Swift Fertilizer Company, Chicago, has purchased a 10 acre site and will erect a \$75,000 fertilizer plant at Albany, Ga. O. E. Burton, Atlanta, Ga., is Southern manager.

The city of Cedartown, Ga., has granted a franchise to W. K. Sloan, Swedesboro, N. J., and associates, to establish a gas plant.

W. C. Treadwell will rebuild a ginnery recently.

to establish a gas plant.

W. C. Treadwell will rebuild a ginnery recently burned at Grahamville, Ga.

The Mutual Gin-Company, Midland, Ga., will operate a grist mill and gin. B. C. Jenkins is president and Carey C. Willis secretary and treasurer.

J. T. Burke, Scott, Ga., will establish a lighting

plant.

The Walker County Hosiery Mill, La Fayette, Ga., will expend \$20,000 in improvements, doubling the capacity of the plant.

pacity of the plant.

The Apalachee Packing Company, Apalachee, Fla., has been incorporated, with \$50,000 capital stock. It will build an ice factory and engage in packing. S. E. Rice, Jr., is president; S. A. Romano, general man-

Robert Jackson and associates, Jacksonville, Fla., will establish an ice plant at Mayport, Fla.

The city of Savannah, Ga., will shortly invite proposals for the erection of an incinerator plant to cost

The city of Savannah, Ga., will shortly invite proposals for the erection of an incinerator plant to cost not over \$100,000.

J. J. Parrish, G. G. Brockett and A. A. Nolle will erect a packing house at Titusville, Fla.

The Alabama Power Company, Birmingham, Ala., which has nearly completed its hydroelectric plant on the Coosa River near Birmingham, will erect a transforming plant at Anniston, Ala.

The city of Columbus, Ga., will shortly order an election on the issuance of \$450,000 of waterworks bonds.

bonds.

William E. Benson, president of the Dixie Railway Company, Benson, Ala., will establish a sawmill with a daily capacity of 50,000 feet.

O: N. Harbin, Atlanta, Ga., has charge of the erection of an ice plant at Dallas, Ga. B. C. Ferrell, superintendent of the lighting plant, will be in charge.

The Miami Fish Company, Miami, Fla., will establish an ice factory and build a cold storage house for the handling of fish.

The Pacific Coast

PORTLAND, ORE., June 10, 1913.

The machinery business in general still appears fairly active, though there is hardly as much life to the market as last month. There is no lack of inquiry in any of the more important departments, but in many cases only tentative figures are being taken, and there is a growing tendency among buyers to await further developments before placing their orders. Demands from the agricultural districts of Oregon, Washington and Idaho are becoming more of a feature, and include a fair amount of shop equipment, in addition to canning outfits, implements and engines for agricultural use. Some curtailment has no doubt been caused by flood conditions along the Columbia and Willamette Rivers, as the water has been unusually high, putting many sawmills and logging outfits temporarily out of commission. The equipment in such places, however, will require more or less overhauling before work is resumed. The lumber market is still weakening, but an early improvement is expected, and the promoters of new mill and logging developments seem disposed to proceed as fast as possible. The machinery business in general still appears fairly

possible.

The Hofius Steel & Equipment Company, Seattle, Wash., handling Shay locomotives and general logging and railroad equipment, will shortly occupy a large warehouse and yard at Tacoma.

The Success Mining Company, Spokane, Wash., is taking bids on an addition to its concentrating plant.

Work will soon be started on a large fill at Seattle, requiring the handling of over a million cubic yards of earth. Holt & Jeffry are the contractors.

The Everett Ice Company, Everett, Wash., is putting in an ice manufacturing plant at that place.

The city of Seattle has taken figures on a rock crusher and electrical machinery for a quarry.

It is reported that the plant of the White Pine Lumber Company, Baker, Ore., recently burned, will be rebuilt soon. built soon.

The new Northern Pacific shop at Centralia, Wash., has just been opened for use.

The Dover Lumber Company, Dover, Idaho, has arranged to operate its mill by electric power and has ordered a transformer outfit and 12 motors, the largest being 125 hp.

Texas

AUSTIN, TEXAS, June 14, 1913.

Unusual activity is noted in oil development operans. The demand for oil drilling machinery and other equipment connected with that work is larger than it has been for some time. Many new companies have been organized in the last few weeks for the purpose of exploring unproved territory in search of oil and gas. Crop conditions continue generally favorable. The machinery and tool trade is better than it was at this

time last year.

Bonds have just been voted at Crystal City for the purchase of the local waterworks plant and for extensions to the distributing system and other improve-

ments to the property.

The Peerless Clothes Pin Company will establish a

The Peerless Clothes Pin Company will establish a plant at Weatherford for manufacturing wire clothes pins. F. A. Frantz is largely interested.

Land owners in what is known as the Peyton Creek Irrigation District near Bay City, Texas, have voted favorably on the proposition of issuing \$125,000 of bonds to take over the Lake Austin reservoir, canals and pumping plant and to enlarge the irrigation system. The Hilburn Mfg. Company will construct a plant at El Paso for manufacturing cotton gloves, overalls and other clothing.

Roman Observations and Ed Weaver have formed the

and other clothing.

Roman Ohnemus and Ed Weaver have formed the Ohnemus-Weaver Company, which will erect a machine shop at Carlsbad, N. M. A full equipment of iron and wood-working machines and tools will be installed.

In addition to erecting a cotton gin at Mesa, N. M., the Egyptian Cotton Growers' Association will build a cotton-seed oil mill. H. B. Atha is president.

The Marshall Brick Company has increased its capital stock from \$20,000 to \$40,000 and will make enlargements and improvements to its plant at Marshall.

The Amarillo Grain & Elevator Company, Amarillo. Texas, has been incorporated with a capital stock of \$40,000. The incorporators are Eugene Early, Allen Early and Harry L. Kerns.

The City Council of Waxahachie, Texas., has ordered an election to be held July 7 to vote on the proposition of issuing \$22,000 waterworks improvement bonds.

The Farmers' Cotton Gin Company will construct a

cotton gin at Garland, Texas. Jasper Rupard is interested.

It is reported that the El Paso & Southwestern Rail-road has purchased a site at Phoenix, Ariz., for its pro-posed terminals to be constructed when its line is extended from Tucson.

The California-Texas Investment Company has purchased a tract of 10,000 acres of land near Pecos, Tex., from W. D. Cowan. It will develop water and construct a large system of irrigation for the purpose of reclaiming the land. The company is composed of Charles Fowler, Frank E. Fowler and Henry S. Judson,

The Rockport Electric Light Company, Rockport, Texas, has sold its electric light and power plant to G. E. Fussell, Eagle Lake, Texas, who will remodel and enlarge it.

The Farmers' Gin Company will build a cotton gin at Alsdorf, Texas. J. W. Swinney is interested.

The Fort Bend Cotton Oil Company, Richmond, Tex., has been organized with a capital stock of \$50,000. The incorporators are D. R. Pearson, J. H. P. Davis and

T. A. Wessendorf.

The Applewhite Syndicate is developing a tract of land near Douglas, Ariz., by means of irrigation, the water supply being obtained from wells by pumping.

Chicago

CHICAGO, ILL., June 16, 1913.

CHICAGO, ILL., June 16, 1913.

Building permits issued in the city of Chicago in May exceeded in number those of any previous month in the city's history. A large portion of these permits were for buildings to house manufacturing operations. Two large projects are especially prominent, namely, the new plant of the Crane Company for which 160 acres have been secured and approximately \$8,000,000 is to be spent, and the new plant of the American Can Company. The machine equipment for the East Chicago plant of the Baldwin Locomotive Works will doubtless be a feature of the trade in the fall months, as the work on the ground and buildings is rapidly progressing. The buildings for the Elgin, Joliet & Eastern shops at Joliet are practically completed and ready for the installation of machinery but delayed deliveries from the factories in Ohio, where the handicap of the flood has not yet been overcome, is holding up liveries from the factories in Ohio, where the handicap of the flood has not yet been overcome, is holding up the installation of machinery, as it is also at the new Busch-Sulzer Bros.-Diesel Engine Company plant at St. Louis. In the Rockford and Freeport district machinery manufacturers report a demand for tools well up to their capacity. Strikes at the foundries of the Arcade Mfg. Company, the Stover Engine Works and the Stover Mfg. Company at Freeport have crippled operations seriously for the time being but outside labor has been secured and work will be continued on the best possible basis.

Eastern Canada

Toronto, June 14, 1913.

The Brown-Boggs Company. Hamilton, Ont., is spending \$85,000 in building to increase its output of tools, presses and canning machinery.

The Hamilton Cotton Company, Hamilton, Ont., will soon complete an addition to its factory.

The Page-Hersey Iron, Tube & Lead Company, Guelph, Ont., is erecting a building for the manufacture of nipples, couplings and cut pipe. The addition will cost about \$100.000.

will cost about \$100,000.

The Canadian Label & Webbing Company, Toronto, will build a one-story addition to its factory, to cost

It is announced that Hood & Sons. Lindsay, Ont., will build a knitting factory on the old site.

An addition will be built to the factory of Fitz-simmons Automobile Body Works Company, Lindsay,

Carpenter Bros., Winona, Ont., contemplate build-

The Cowan Company is building a large addition to its factory in Toronto.

The Galt Brass Mfg. Company, Galt. Ont., is building an addition to cost \$7000. It will extend its output to include brass goods used in the plumbing and beating trade.

heating trade.

The MacDonald Thresher Company, Stratford. Ont., sputting up a \$75,000 addition to its plant. This will increase the company's present annual output by about

It is stated on the best authority that the directors

of the Dome Mines, Porcupine, Ont., have decided to add 100 stamps to their mill, making a total of 140

stamps.

The Parkes Construction Company, North Tonawanda, N. Y., will establish a plant in Hamilton, Ont. The company has leased temporary quarters and will build sectional iron frame green houses, light steel structures, etc. It will also manufacture ventilating machinery, heating apparatus, etc. F. W. Parkes is the manager of the company, and the uptown office is at 167½ East King street, Hamilton.

The Best Knit Company, Brampton, Ont., is adding considerable equipment and further extending its plant.

A. S. Parker, Dundas, Ont., has disposed of his shoddy manufacturing machinery, and it is understood will install knitting machinery.

shoddy manufacturing machinery, and it is understood will install knitting machinery.

The Colonial Knitting Company, Guelph, Ont., is now occupying the four-story brick building previously occupied by the Guelph Stove Company, in addition to its original plant. It is planned to erect a new factory building during the coming summer, when additional machinery will be installed.

Fire destroyed the saw mill owned by John McDonald of Walton, five miles south of Brussels, Ont.

Two new industries are expected for Brampton.

Donald of Walton, five miles south of Brussels, Ont.

Two new industries are expected for Brampton,
Ont. On June 27 a vote will be taken on measures to
bring the Hewetson Shoe Company and the Hough
Lithographing Company, two going concerns, from
Toronto. The Hewetson Company will receive a loan
of \$20,000. The Hough Lithographing Company will
receive a loan of \$15,000. Both companies will erect
first class plants.

receive a loan of \$15,000. Both companies will erect first class plants.

The Union Carbide Company, Toronto, Canada, has been incorporated with a capital stock of \$2,000,000.

The Window Strip and Supply Company, Montreal, has been incorporated with \$50,000 capital stock, by Harry Webster Ellicott. Harry Cutmore, manager, and Anson Hall Campbell of Montreal, and others, to manufacture metal weather strips.

The veneer mill at Sutton, Que., was totally destroyed by fire. The loss is estimated at \$75,000, partially covered by insurance. The plant is owned by the Veneer Mill Company, of Escanaba, Mich.

The D. J. Barker Foundry Company, Ltd., Brighton, Ont., has been incorporated with \$100,000 capital stock, by William Wallace Porte. Samuel David Ross and George Drewry, to manufacture heating appliances and to conduct a general foundry and machinery business.

ness.

The Oxygenated Stove & Heater Company, Toronto, has been incorporated with \$350,000 capital stock, by J. Burton Burdick, Albert Williams Craig

The Calgary Brick & Supply Company, Ltd., To-ronto, has been incorporated with a capital of \$200,000, by William Laidlaw, Clifton Medley Johnston and

The Canadian Rector Gas Heating Company, Ltd., The Canadian Rector Gas Heating Company, Ltd., Hamilton, Ont., has been incorporated with \$100,000 capital stock, by James Frederick Lushman, Jehu Sylvester Barnum and John Bethlon McNary, to manufacture lighting apparatus.

The ratepayers of Tilbury, Ont., have passed a bylaw to grant the Canadian Forging Company a loan of \$10,000, repayable in ten years.

The Canadian Abrasives, Ltd., Dundas, Ont., will build a plant on a site of eight acres which it has purchased.

chased.

The Western Ontario Electric Company, Ltd., St. Thomas, Ont., has been incorporated with \$25,000 capital stock, to manufacture lighting fixtures, electric appliances and supplies. Charles A. Branston and Christopher F. Goodwin are directors.

The Gravenhurst Iron Specialty Company, Grimsby, Ont., is preparing plans for a factory which it will build this summer.

Ont., is preparing plans, build this summer.

The Napanee Brick & Tile Company, Napanee, Ont.,

will build and equip a plant.

The Rimouski Brick & Terra-Cotta Company, Ltd. Quebec, has been incorporated with a capital stock of \$100,000 by James Marmaduke McCarthy, William Price and others, to manufacture pressed brick, natural brick. terra-cotta, tiles, pottery. drains, hollow

sewer-pipe.

sewer-pipe.

Instantaneous Cleansers, Ltd., Toronto, has been incorporated, with a capital stock of \$60,000, by Alfred Passmore Poussette, Colin Gray, and others, to manufacture blackings, polishes, alkalis, and ammonia products. Davison-Valois, Ltd., Montreal, has been incorporated, with a capital stock of \$25,000, by William Joseph Davison, Joseph Michael, Arthur Valois, and others, to manufacture gloves, boots, shoes, etc.

Tobin & Simmons, Ltd., Montreal, has been incorporated, with a capital stock of \$50,000, by George

Leonard Alexander, Louis Joseph Maurice Dugas, and others, to import, manufacture and prepare for use stone of all kinds.

The Herbert Morris Crane & Hoist Company, Ltd., Toronto, has been incorporated with a capital stock of \$100,000 by James Steller Lovell, William Bain, and others, to manufacture cranes, hoists, and other ma-

C. H. Swift & Sons, Ltd., Sherbrooke, Que., has been incorporated with a capital stock of \$50,000 by Charles Henry Swift, Utica, N. Y., Andrew Cutler Bis-sell, Ernest Harry May, and others, to manufacture

The Scotstown Mfg. Company, Ltd., Scotstown, Que., has been incorporated with a capital stock of \$50,000 by Angus McKenzie, Robert Alexander Scott, The Scotstown Mfg. Company, Ltd., and others, to manufacture wooden products.

The Massey-Harris Company, Toronto, will erect a four-story reinforced concrete structure at the corner of King and Shaw streets, to be used for pattern stor-The cost is estimated at \$70,000.

It is officially announced that the Steel Company of Canada will build a wire nail manufacturing plant at Fort William, Ont. The plant will be built on property acquired by the company two years ago. Contracts have been let and the plant is to be ready to turn out the finished product not later than January 1, 1914.

Western Canada

WINNIPEG, June 13, 1913.

For some kinds of machinery the demand is fairly active. The companies doing business at Vancouver, B. C., report good sales to the mines and lumber mills, but flour mill machinery is quieter than at the corresponding date last year. The flour trade has been rather some time, and the leading mills, instead of adding to their capacity, are curtailing their output. Some large contracts for waterworks machinery and consider-

able for other municipal works are being booked.

The Town Council of Tofield, Alberta, has authorized the installation of new waterworks, work on which will begin right away. The equipment will include a

new steam boiler.

Gordon, Ironside & Fares, Ltd., a large Winnipeg meat packing and abattoir firm, with branches in several

meat packing and abattoir firm, with branches in several parts of Western Canada, has decided to treble the branch packing plant at Moose Jaw, Sask.

The Winnipeg board of control is considering the reorganization of the high pressure plant and its electrification is contemplated. Tenders will be called for two kinds of pumps. One style would have a capacity of 360,000 gal. per min. at a pressure of 150 lb. to the sq. in., while the other would have a capacity of 180,001 gal. per min. at a pressure of 300 lb.

The main part of the lumber mill of the Big River Lumber Company, Ltd., Big River, Sask., burned this week with a loss of about \$500,000. The plant was one of the largest in Canada, with a daily capacity of 600,000 ft. It will be rebuilt without delay.

The Alberta Farmers' Co-operative Elevator Company, Ltd., Calgary, will erect a grain elevator at Grassy Lake, at a cost of about \$8,000.

Plans are being prepared for a 10-story office build-

Lake, at a cost of about \$8,000.

Plans are being prepared for a 10-story office building at Vancouver, B. C., for the Credit Foncier Franco-Canadian Company. The architects are H. L. Stevens & Co., Duncan Building, Vancouver.

F. L. Buckley, who has a shingle mill at Sechelt, B. C., is organizing a company to establish a planing mill and resaw mill industry at New Westminster, B. C. The name of the new organization will be the Iowa Lumber & Timber Company, Ltd.

The mill of the Thompson Lumber Company, Kamloops, B. C., which burned some time ago, is now being

B. C., which burned some time ago, is now being rebuilt.

The Mount Benson Lumber Company, Ltd.,

imo, B. C., intends to erect a sawmill this summer.

The Canadian Puget Sound Lumber Company, Ltd.,
Victoria, B. C., is completing plans for a modern combination cedar mill at Esquimalt Harbor.

The mill and timber limits of the Matsqui Lumber Company, Mount Lehman, B. C., have been purchased

Company, Mount Lehman, B. C., have been purchased by Edward Norton, who will make extensive improvements by the addition of new machinery.

It is reported that the Shevlin-Clarke Lumber Company, Ltd., Fort Frances, western Ontario, will erect a third sawmill in the near future. The first mill was snished last year, and the second is now under construction.

The Kamloops-Vancouver Meat Company, Kamloops and Vancouver, B. C., is considering the lishing of a modern packing plant at Caase, B. C. to cost about \$100,000.

The Canadian Zinc Company is being organized at Vancouver, B. C., to build a zinc smelter at Port Moody,

B. C.

The City Council of Calgary, Alberta, has planned a six-story Industry Housing Building to provide accommodation for small industries.

The Rumely Products Company, Edmonton, Alberta, will erect a large machinery warehouse.

Port Arthur Wagon & Implements, Ltd., Port Arthur Wagon & Implemen

thur, Ont., has been incorporated with a capital stock of \$500,000 by Harry Riley, William Robert Anderson, George Whitaker Morley and others, to manufacture machines and implements. Hamilton Walter is sec-

The Carlson lumber and planing mill, with 5,000,000 ft. of lumber, has been purchased for \$2,000,000, and will be known as the Belly River Lumber Company, of Lethbridge, Alberta.

It is announced that the Rice Malting Company, Winnipeg, Man., will erect a malting plant with a capacity of 2,000,000 bushels in one of three cities in Alberta or Saskatchewan.

According to a statement received by W. A. Buchanan, of Lethbridge, from the Dominion Parliament, the first interior elevator for Saskatchewan will be built at Moose Jaw and the first elevator in Alberta will be built at Calgary. Hon. George H. Perley, acting Minister of Trade and Commerce, announced that the sites would be purchased and tenders called for the construction of the elevators as soon as possible. struction of the elevators as soon as possible.

Government Purchases

WASHINGTON, D. C., June 12, 1913.

The supervising architect of the Treasury Department, Washington, will receive bids until June 30 for hydraulic lift at the United States Treasury Building,

Washington; until July 10 for the mechanical equipment of the post office at New Bedford, Mass.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until July 1, schedule 5567, for valve gates for the Brooklyn navy

The secretary of the Interior Department, Washington, opened bids June 5 for the installation of one 350 kw. engine and generator as follows:

Hoven-Owens-Rentschler Company, \$13,955; Harrisburg Foundry & Machine Company, \$13,900, 168 days; Ball Engine Company, \$14,851, alternate, add \$400, 135 days; Ridgway Dynamo & Engine Company, \$11,432, 135 days; Providence Engineering Works, \$13,600 and \$13,400, 125 days; \$13,800 and \$13,500, 120 days; alternate bid \$11,050 and \$10,800, 125 days; alternate bids \$11,250 and \$10,950, 150 days; De Laval Steam Turbine Company, alternate \$7,500 and \$7,000, 130 days and 120 days.

The secretary of the Interior Department, Washington, opened bids June 5 for the installation of a water-tube boiler in the old post office building, Washington, D. C., as follows:

E. Keeler Company, 35 hp., \$5,892, 120 days; 250 hp., \$5,393, 120 days; Heine Safety Boiler Company, 350 hp., \$6,170, 250 hp., \$5,524, delivery 90 days.

Bids were received at the bureau of supplies and accounts, Navy Department, Washington, D. C., on June 10 for furnishing supplies for the navy yards as follows:

- Bid 1. Art Metal Construction Company, Jamestown, N. Y.
 5. Advance Machinery Company, Toledo, Obio.
 6. American Electrical Heater Company, Detroit, Mich. |
 7. American Woodworking Machinery Company, Rochester,

- American Woodworking Machinery Company, Rochester, Brown & Sharpe Mfg. Company, Providence, R. I. Bethlehem Steel Company, South Bethlehem, Pa. Bridgeport Safety Emery Wheel Company, Bridgeport, Conn. Baker & Hamilton, San Francisco, Cal. Bullard Machine Tool Company, Bridgeport, Conn. F. A. Branda & Co., New York City. Bardons & Oliver, Cleveland, Ohio.
 Burke Electric Company, Erie, Pa. Bliss Company, Brooklyn, N. Y. Berlin Machine Works, Beloit, Wis. Blake & Knowles Steam Pump Works, New York City. Bay State Crucible Company, Taunton, Mass. Jonathan Bartley Crucible Company, Trenton, N. J. Cleveland Punch and Shear Works Company, Cleveland, Ohio. Concover-Overkamp Machine & Tool Company, Cincinnati, Ohio. Central Construction & Supply Company, Philadelphia, Pa. Cincinnati Electrical Tool Company, Cincinnati, Ohio. Camden Iron Works, Camden, N. J. Detrick & Harvey Machine Company, Baltimore, Md. Joseph Dixon Crucible Company, Philadelphia, Pa. Dienelt & Elsenhardt, Inc., P

78. Frevert Machinery Company, New York City.
79. General Electric Company, Schenectady, N. Y.
80. J. H. Gautier & Co., Jersey City, N. J.
81. George Gorton Machine Company, Racine, Wis.
83. Garvin Machine Company, New York City.
85. Greenlee Bros. & Co., Rockford, Ill.
87. Gleason Works, Rochester, N. Y.
96. Hauck Mfg. Company, New York City.
96. Hauck Mfg. Company, Brooklyn, N. Y.
101. Hoskins Mfg. Company, Detroit, Mich.
103. Honolulu Iron Works Company.
104. Hoisting Machinery Company, New York City.
105. Hilles & Jones Company, Wilmington, Del.
107. Jones & Lamson Machine Company, Springfield, Vt.
110. I. H. Johnson, Jr., & Co., Philadelphia, Pa.
111. H. W. Johns-Manville Company, New York.
114. Kemp Machinery Company, Raltimore, Md.
116. Charles F. Kenworthy, Waterbury, Conn.
117. Knox & Bro., New York City.
118. Lucas Machine Tool Company, Cleveland, Ohio.
119. Lovekin Pipe Expanding & Flanging Machine Company, inadelphia, Pa.
120. Landis Machinery Company, Waynesboro, Pa.
121. Libby, McNeil & Libby, Union Stock Yards, Chicago, Ill.
123. R. K. Le Blond Machine Tool Company, Cincinnati, Ohio.
128. Mead-Morrison Mfg. Company, Cambridgeport, Mass.
129. Mayer Ice Machine & Engineering Company, Jersey City,
155. Mitts & Merrill, Saginaw, Mich. 28. Mead-Morrison Mfg. Company, Cambridgeport, Mass.

9. Mayer Ice Machine & Engineering Company, Jersey City,

15. Mitts & Merrill, Saginaw, Mich.

17. Monarch Engineering & Manufacturing Company, Balti
18. Mumford Molding Machine Company, New York City.

19. Manning, Maxwell & Moore, New York City.

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19. Manning, Maxwell & Moore, New York City.

19. New London Ship & Engine Company, Groton, Conn.

14. J. H. Newbauer & Co., San Francisco, Cal.

15. Newton Machine Tool Works, Inc., Philadelphia, Pa.

16. D. Nast Machinery Company, Philadelphia, Pa.

18. Norwalk Iron Works Company, South Norwalk, Conn.

19. George A. Ohl & Co., New York, N. J.

10. Oliver Machinery Company, New York City.

20. Patterson-Allen Engineering Company, New York City.

21. Prattis Whitney Company, Hartford, Conn.

21. J. W. Paxson Company, Philadelphia, Pa.

22. Henry Pells & Co., New York City.

23. Prentiss Tool & Supply Company, Hartford, Conn.

24. Henry Pells & Co., New York City.

25. Quigley Furnace & Foundry Company, Springfield, Mass.

26. Rochester Barrel Machine Works, Rochester, N. Y.

27. Richmond Electric Works, Richmond, Va.

28. P. H. & F. M. Roots Company, New York City.

29. W. S. Rockwell Company, New York City.

20. W. S. Rockwell Company, New York City.

20. Roovers Bros. Machine Tool Works, Brooklyn, N. Y.

21. Roevers Bros. Machine Tool Works, Brooklyn, N. Y.

22. Roardon, Crucible Company, Philadelphia, Pa.

23. Rosers Bros. Machine Company, Philadelphia, Pa.

24. Rosers Bros. Machine Company, Rockford, Ill.

25. Richmond Electric Company, Hartford, Comn.

26. Rochord Milling Machine Company, Rockford, Ill.

27. Richmond Electric Company, Hartford, Comn.

28. Rosers Bros. Machine Tool Company, Priladelphia, Pa.

29. Reading Crane & Hoist Works, Reading, Pa.

20. Rosers Bros. Machine Tool Company, Priladelphia, Pa.

21. Jacob Shannon & Co., Empire Building, Pittsburgh, Pa.

22. Taber Mfg.

23. Taber Mfg.

24. Taber Mfg.

25. Taber Mfg.

26. Tool Company, New York Cit 135. Mitts & Merrill, Saginaw, Mich. 137. Monarch Engineering & Manufacturing Company, Balti-

Class 11. Mare Island—1 refrigerating machine, with spare parts—Bid 22, \$1,252; 43, \$1,296; 129, \$1,126.45; 224, \$1,648; 228, \$1,709; 229, \$1,295.
Class 11. Do, delivered f. o. b. works. Bid 111, \$1,990, part; 129, \$1,024; 184, \$6,002.

\$1,024; 184, \$6,002.

Schedule 5462—Ordnance.

Class 141. Norfolk—1 No. 1 hollow hexagon turret lathe—Bid 236, \$1,000.

Class 142. Norfolk—1 3x36-in. flat turret lathe, motor driven—Bid 114, \$1,625.50: 107, \$1,600: 236, \$2,090.

Class 143. Norfolk—2 2½x24-in. flat turret lathe, motor driven—Bid 114, \$1,303.20: 107, \$1,300: 236, \$1,385.

Schedule 5463—Construction and Repair.

Class 152. Pearl Harbor—1 combined stake riveter and punch—Bid 103, \$1340: 105, \$1,500 and \$1,550; 139, \$1,072 and \$1,029; 163, \$1,502.

Class 152. Pearl Harbor—1 band saw for cutting metals—Bid 103, \$291.

Class 153. Pearl Harbor—Paint-mixing machinery—Rid 192 \$2,877.

Schedule 5465-Construction and Repair.

Class 159. Brooklyn—1 horizontal pressure blower—Bid 179, \$1,550; 197, \$1722 and \$2,069.
Class 160, Brooklyn—1 hydraulic shear—Bid 16, \$2,014; 53, \$1,735; 240, \$1,575; 253, \$3,000.

Class 161. Brooklyn—1 hydraulic jogging press—Bid 16, \$4,955; \$3,\$470 and \$3,770; 240, \$2,395; 253, \$7,250.

Class 162. F. o. b. bidder's works for New York—2 air compressors—Bid 27, \$3,000; 149, \$2,800; 158, \$2,300.

Schedule 5466—Steam Engineering.

Class 171. Portsmouth—2 turnable lathes, motor driven—Bid 107, \$1,950 and \$1,650; 163, \$1,725 and \$1,830; 165, \$2,445; 236, \$1,385 and \$2,090.

Schedule 5467—Steam Engineering—All Pearl Harbor.

Class 172. 1 combined disk and spindle sander—Bid 7, \$307.85; 75, \$444.37; 103, \$307.85; 139, \$855; 160, \$575 and \$480; 163, \$290 and \$275.

Class 173. 1 revolving oilstone Universal grinder—Bid 160, \$290 and \$275.

Class 174. 1 single-spindle reversible friction drive shaper—Bid 7, \$283.02; 73, \$388.25; 75, \$321.97 and \$348.97; 78, \$397; 103, \$283.02; 139, \$447; 160, \$415 and \$403.

Class 175. 1 Universal double-arbor caw bench—Bid 7, \$629.75; 73, \$46; 75, \$609.99; 78, \$348; 85, \$572.17; 103, \$629.75; 139, \$855;

Class 176. 1 vertical single-spindle boring machine—Bid 7, \$02.44; 73, \$5118; 75, \$349.73; 78, \$399; 103, \$302.44; 139, \$313; 160, \$470 and \$455.

Class 177. 2 patent scroll saws and complete equipment—Bid 7, \$412.41; 75, \$241.88 and \$249.38; 103, \$206.21; 139, \$185; 160, \$227. Class 178. 1 right-hand band sawing machine and 1 left-hand do—Bid 7, \$4845.16; 29, \$979.58; 73, \$1,560; 75, units; 103, \$845.15; 139, \$455.16; 29, \$759.58; 73, \$1,560; 75, units; 103, \$845.15; 139, \$450; 75, \$339.95; 78, \$441 and \$440; 160, \$427. Class 179, 3 grindstone frames and stones—Bid 7, \$356.05; 73, \$289.75; 103, \$350.05; 139, \$590; 156, \$570 and \$610; 160, \$460 and \$160, \$277, \$358.59; 75, \$759.75, \$7595.

Class 180. 1 hand planer and jointer—Bid 7, \$350.05; 73, \$289.75; 103, \$350.05; 139, \$590; 156, \$570 and \$610; 160, \$460 and \$160, \$295 and \$385.

Class 181. 1 single-cylinder double-belted surface—Bid 7, \$761.67; \$9, \$90.63; 73, \$750; 75, \$958.

Class 181. 1 patternmaker's extension bed gap lathe—Bid 119, \$3,225; 160, \$1,710 and \$1,730; 163, \$140.

Class 182. 4 wood trimmers—B

Class 190. 1 geared-head engine lathe—Bid 110, \$14,949; 145, \$12.105.

Class 191. 1 double back-geared engine lathe—Bid 73, \$3.061; 103, \$3,687; 110, \$4,053; 123, \$4,002; 139, \$3,820; 145, \$3,140; 163, \$2,965 and \$3,227.

Class 192. 2 double back-geafed engine lathes—Bid 73, \$1,676; 103, \$1,991; 123, \$2,266; 139, \$2,375 and \$2,225; 145, \$1,935; 163, \$1,708 and \$1,805; 200, \$1,842.

Class 193. 1 quick-change engine lathe—Bid 73, \$1,170; 78, \$1,196; 103, \$1,436; 123, \$1,353; 139, \$1,415 and \$1,120; 145, \$1,380; 163, \$1,195 and \$1,246; 200, \$1,287.

Class 194. 1 quick-change gear engine lathe—Bid 73, \$1,382; 78, \$1,358 and \$1,474; 103, \$1,600; 123, \$1,553; 139, \$1,690; 145, \$1,550; 163, \$1,377 and \$1,478; 200, \$1,250.

Class 195. 1 quick-change gear engine lathe—Bid 38, \$1,017; 41, \$672; 73, \$985; 78, \$1,140 and \$1,052; 103, \$1,127; 123, \$1,090; 139, \$1,250; 145, \$1,105; 156, \$1,010; 163, \$1,013 and \$1,610; 200, \$1,158. \$1,607; 73, \$909,50; 78, \$1,085 and \$987; 103, \$1,063; 123 \$1,056; 139, \$1,085; 145, \$1,05; 145, \$1,085; 145, \$1,089; 156, \$952; 163, \$976 and \$942; 200, \$1,085; 197, 1 engine lathe, 16 in—Bid 123, \$1,446.75; 130, \$1,265

\$1,175 and \$1,165; 145, \$1,039; 156, \$952; 163, \$976 and \$942; 200, \$1,085.

Class 197. 1 engine lathe, 16 in.—Bid 123, \$1,446.75; 139, \$1,265; 165, \$1,605.

Class 198. 1 quick-change gear engine lathe, 14 in. by 8 ft.—Bid 41, \$492; 78, \$494; 103, \$429; 123, \$461; 139, \$500 and \$515; 145, \$446; 156, \$424; 163, \$433 and \$475; 200, \$491.

Class 199. 1 quick-change gear engine lathe, 12 in. by 6 ft.—Bid 78, \$372; 123, \$403,50; 139, \$390 and \$493; 143, \$438; 156, \$329; 163, \$315.

Class 200. 1 toolmakers' engine lathe, 10 in. by 5 ft.—Bid 139, \$800; 165, \$839.

Class 201. 3 brass turret lathes—Bid 73, \$1,274.75, for part, 139, \$1,275, part; 200, \$2,447.

Class 202. 1 precision bench lathe—Bid 139, \$728; 163, \$1,569; 209, \$1,641.

Class 203. 1 turret lathe 2x26 in. belt driven—Bid 107, \$1,375; 139, \$1,258 and 1,471; 165, \$1,503.

Class 204. 2 ½/x26-in. turntable lathe—Bid 107, \$1,775; 139, \$2,220, \$2,475, \$1,468 and \$1,643; 165, \$1,962.

Class 205. 1 3x36-in. turret lathe—Bid 107, \$1,650; 139, \$2,220, \$2,475 and \$1,990; 165, \$2,389.

Class 206. Rigid turret lathe, 21 in.—Bid 23, \$2,896; 71, \$3,040; \$15,595; 163, \$3,3076.

Class 207. 1 vertical turret lathe, 42 in.—No bids.

Class 208. 1 open-side planer—Bid 55, \$6,814.

Class 209. 1 reversing motor-driven planer—Bid 139, \$2,496 and \$2,906; 145, \$2,310; 163, \$3,431; 191, \$3,049.

Class 210. 1 reversing motor planer—Bid 139, \$2,3400; 145, \$2,080; 212, \$25,100.

Class 210. 1 reversing motor planer—Bid 139, \$2,3400; 145, \$2,080; 212, \$25,100.

Class 210. 1 reversing motor planer—Bid 73, \$935; 103, \$1,085; 139, \$1,172 and \$1,200; 145, \$1,183; 156, \$1,000; 163, \$859 and

Class 210. 1 reversing motor planer—Bid 139, \$23,400: 145, \$20,800: 212, \$25,100.

Class 211. 1 26-in. single traveling-head shaping machine.—Bid 139, \$3,205 and \$3,216; 145, \$2,980.

Class 212. 1 back-geared crank shaper—Bid 73, \$935: 103, \$1,085: 139, \$1,172 and \$1,200: 145, \$1,183; 156, \$1,000; 163, \$859 and \$1,105; 191, \$1,009; 200, \$1,186.

Class 213. 2 all-geared high-nower shapers—Bid 73, \$700: 139, \$896: 145, \$710; 156, \$615; 163, \$735 and \$897.50: 191, \$778.

Class 214. 1 vertical boring and turning mill, 16 ft.—Bid 139, \$18,725; 145, \$18,022: 163, \$16,775: 212, \$22,715.

Class 215. 1 vertical boring and turning mill, 60 in.—Bid 71, \$4,400; 139, \$4,770: 145, \$3,159: 163, \$3,750; 212, \$6,500.

Class 216. 1 horizontal boring, drilling, and milling machine, 62 in.—Bid 71, \$3,400: 118, \$3,550: 139, \$2,649: 145, \$2,890: 163, \$2,948.

Class 217. 1 7-in. spindle horizontal boring, drilling and milling machine—Bid 55, \$12,522: 145, \$11,400; 212, \$19,100.

Class 218. 1 radial drilling machine—Bid 71, \$3,625; 145, \$2,675; 163, \$2,460.

Class 219. 1 standard radial drill, 4½-ft. arm—Bid 73, \$1,739: 103, \$1,352 and \$1,692: 139, \$1,466; 145, \$1,369; 156, \$1,190; 163, \$1,352.

\$1,535.
Class 220. 2 standard radial drills, 4-ft. arm—Bid 73, \$2,848; 103, \$2,704; 139, \$2,790; 145, \$2,610; 156, \$2,270; 163, \$2,958.
Class 221. 1 upright drill, 24 in., motor-driven, and 1 do, belt-driven—Bid 73, \$710; 78, \$1,002; 139, \$893 and \$607; 145, \$669; 136, \$635; 163, \$855 and \$1,094.

Class 222. 2 upright drills, motor-driven, and 2 do, belt-driven-d , 5, 51,075; , 8, \$1,058; 139, \$976; 145, \$844; 156, \$856; 163,

Class 222. 2 upright drills, motor-driven, and 2 do, belt-driven—Bid 10, \$1,152; 18, \$1,058; 139, \$976; 145, \$844; 156, \$856; 163, \$806 and \$1,150. Class 223. 3 sensitive drills, 16 in.—Bid 139, \$121 and \$60; 145, \$86; 156, \$120; 163, \$95. Class 224. 1 multiple spindle drill—Bid 71, \$1,810; 73, \$2,353; 139, \$1,460 and \$1,525. Class 225. 2 heavy-duty milling machines—Bid 13, \$1,284.15; 123, \$1,390; 139, \$1,290; 145, \$1,370; 163, \$1,557; 186, \$1,310. Class 226. 1 heavy duty universal milling machine—Bid 13, \$1,936.50; 123, \$2,212.40; 139, \$2,240 and \$2,224; 145, \$2,086: 163, \$1,936.50; 123, \$2,212.40; 139, \$2,240 and \$2,224; 145, \$2,086: 163, \$1,936.51; 139, \$2,2350 and \$2,229; 145, \$2,285; 103, \$2,069.80; 123, \$2,511; 139, \$2,350 and \$2,329; 145, \$2,285; 103, \$2,052 and \$2,307. Class 228. 1 vertical spindle—Title

Class 228. 1 vertical spindle milling machine—Bid 13, \$2,107.75, 139, \$1,912; 163, \$2,023.

Class 229. 1 portable milling machine—Bid 139, \$610.

Class 229. 1 portable milling machine—Bid 139, \$610.
Class 230. 1 automatic gear cutter for spur gears—Bid 139, \$4,515;
145, \$4,800; 163, \$4,493.
Class 231. 1 automatic

145, \$4,800; 163, \$4,493.

Class 231. 1 automatic gear cutter—Bid 145, \$982; 163, \$2,205.

Class 232. 1 automatic bevel gear planer, 24 in.—Bid 87, \$2,245.

Class 233. 1 automatic bevel gear planer, 36 in.—Bid 87, \$2,295.

Class 234. 1 18-in. crank-slotting machine—Bid 139, \$3,098; 145, \$2,830; 155, \$2,948; 212, \$3,325.

Class 235. 2 double dry grinders—Bid 18, \$462; 139, \$645.

Class 236, 2 single wet tool grinders—Bid 18, \$379.15; 139, \$386.

Class 237. 2 drill grinders, belt-driven—Bid 78, \$261; 139, \$175;

156, \$64 and \$182; 163, \$182 and \$175; 212, \$225; 251, \$210.

Class 238. 1 Universal tool-grinding machine—Bid 71, \$600; 212, \$1,755.

\$1,725.
Class 239. 1 portable electrically driven bench grinder—Bid 44, \$29.50; 117, \$30.
Class 240. 1 Universal grinding machine—Bid 13, \$1,116; 145, \$1,250; 156, \$1,075.
Class 241. 1 vertical surface-grinding machine—Bid 163, \$2.523 and \$2,654; 165, \$2,659.
Class 242. 1 buffer and grinder, motor-driven—Bid 18. \$241.60.
Class 243. 1 Universal cutter grinder—Bid 123, \$396.50; 139, \$700: 145, \$4445; 163, \$386.
Class 244. 3 combination wet and dry grinders—Bid 18, \$285.55; 139, \$396.

139, \$396. Class 245.

139, \$396.
Class 245. 1 cup-wheel grinder, pedestal type—Bid 145, \$121; 155, \$128; 216, \$112.
Class 246. 1 heavy-cut saw-sharpening machine, belt driven—Bid 139, \$160: 145, \$300; 155, \$163.
Class 247. 1 buffing lathe, motor driven—Bid 18, \$259.44.
Class 248. 1 rapid-cut power hacksaw, belt-driven, and 2 do, motor-driven—Bid 78, \$584; 139, \$304.
Class 249. 1 general utility 9-inch shop cold saw cutting-off machine—Bid 139, \$1,000; 121, \$1,264; 155, \$1.287; 163, \$1.064; 233, \$1,350.

machine—Bid 139, \$1,000; 121, \$1,264; 155, \$1,287; 163, \$1,064; 233, \$1,350.

Class 250. 1 metal band saw automatic stock cutter, alternating current, and 1 do, direct current—Bid 163, \$733.

Class 251. 1 keyseater. belt-drivén—Bid 139, \$1,492 and \$1,335; 135, \$1,214,20 and \$1,583.20.

Class 252. 1 centering machine, 6-in., two-spindle—Bid 139, \$25; 165, \$372.

Class 253. 1 automatic screw machine, single spindle—Bid 139, \$1,645.

\$1,645.

Class 254. 1 double-head bolt cutter—Bid 71, \$850; 120, \$796 and \$845; 139, \$755: 145, \$770; 156, \$830; 163, \$723.

Class 255. 1 bolt-pointing machine, belt-driven—Bid 71, \$310; 120, \$315: 139, \$270; 156, \$305.

Class 256. 1 nut tapper—Bid 139, \$580; 156, \$585.

Class 257. 1 nut facer—Bid 71, \$500: 139, \$495.

Class 258. 1 single-head pipe and nipple-threading machine—Bid 71, \$705; 120, \$704 and \$709; 139, \$665.

Class 259. 1 automatic screw machine, belt-driven—Bid 13, \$1,415.50.

Class 260. 1 rapid screw-slotting machine, belt-driven—Bid 13, \$1,415.50.

260. 1 rapid screw-slotting machine, belt-driven-Bid

Class 260. 1 rapid screw-slotting machine, belt-driven—Bid 3, \$90.
Class 261. 1 magnetic separator, belt-driven—Bid 139, \$175, \$280 and \$165: 171, \$400.
Class 262. 1 trimming press—Bid 27, \$1.095; 139, \$1,070; 163, \$1,015: 195, \$853.40; 221, \$933.
Class 263. 1 hand-power shaft straightener—Bid 53, \$785; 64, \$690; 253, \$640.
Class 264. 1 wheel press—Bid 16, \$2,355; 53, \$1,610; 64, \$1,700; 139, \$2,080: 145, \$1,400; 253, \$2.025.
Class 265. 1 die-sinking machine, belt-driven—Bid 139, \$850, \$723, \$960 and \$840; 165, \$1,037.
Class 266. 1 engraving machine—Bid 81, \$698; 192, \$665.
Class 267. 1 electric hoist. 2 ton. and do, 4 ton—Bid 103, \$719; 104, \$1,159; 117, \$719; 139, \$719.
Class 268. 1 double punch and shear—Bid 139, \$650; 145, \$568; 156, \$731; 163, \$644.50 and \$654.50; 233, \$650; 237, \$906.
Class 269. 1 angle iron shear—Bid 105, \$1,300; 139, \$1,455; 145, \$1,390; 173, \$1,460; 237, \$1,095.
Class 270. 1 rotary splitting shear—Bid 191, \$1,455; 193, \$3,700; 203, \$1,800.

Class 270. 1 rotary splitting shear—Bid 191, \$1.455; 193, \$3,700; 203, \$1,800.

Class 271. 1 rotary splitting machine—Bid 191, \$764; 193, \$1,800; 195, \$900.

Class 272. 1 plate and rod hand shear, 1 lever shear and 1 hand punch—Bid 117, \$136; 139, \$139, 50; 159, \$95, part; 233, \$80, part. Class 273. 1 horizontal punch, 6-in. throat—Bid 105, \$900; 139, \$90 and \$765; 145, \$1,060; 165, \$815; 163, \$774; 203, \$840; 233, \$745; 237, \$1,180.

Class 274. 7 portable cylinder boring bars and fixtures—Bid 78, \$3,160; 139, \$3,111; 156, \$2,503.

Class 275. 1 pipe-bending machine, hand power—Bid 117, \$173.50; 139, \$150; 156, \$142; 188, \$169.

Class 276. 1 tube and flue cutting machine—Bid 162, \$1,300; 191, \$378.

Class 277. 2 double-geared hand-power brakes—Bid 73, \$665;

191, \$378.

Class 277. 2 double-geared hand-power brakes—Bid 73, \$665: 66, \$685: 139, \$521; 156, \$585: 159, \$603.64: 163, \$582: 203, \$560. Class 278. 1 hydraulic pipe bender—Bid 53, \$835: 253, \$975. Class 279. 1 duplex pump—Bid 24, \$566 or \$709.50: 32, \$603, \$593 and \$633: 253, \$600: 255, \$526. Class 280. 1 bracket power hammer—Bid 58, \$500. Class 281. 1 plate-bending roll—Bid 105, \$1.000: 139, \$1,110; 145, \$1,275: 163, \$894 and \$973: 233, \$1,290: 237, \$1,097. Class 282. 1 flange facing machine—Bid 155, \$1,400 and \$1,510. Class 283. 1 pipe expanding and flanging machine—Bid 162, \$3,800. Class 284. 1 pipe machine. 2-in.—Bid 130, \$400.

Class 284. I pipe machine, 2-in.—Bid 139, \$402.
Class 285. I standard pipe-threading machine—Bid 145. \$1.765.
Class 286. I standard pipe-threading machine, 4-in.—Bid 145.

Class 287. I standard pipe-threading machine, 2-in.—Bid 120, \$842 and \$849; 139, \$770; 145, \$627.

Class 288. 3 hydraulic hand test pumps—Bid 64, \$55; 253, \$46.50.

Class 289. 1 lead pipe lift—Bid 253, \$1,450.
Class 290. 1 centrifugal sand mixer—Bid 171, \$430; 212, \$765.
Class 291. 5 arbor presses—Bid 73, \$53.50; 78, \$55 and \$93; 139,
\$41 and \$65; 163, \$246.
Class 292. 3 1-ton electric hoists—Bid 104, \$446.
Class 293. 1 flanging clamp, hand operating—Bid 105, \$400;
13, \$320; 203, \$315; 237, \$400.
Class 294. 1 baby jolt and 1 plain jolt—Bid 138, \$740 and \$540;
Class 295. 1 power squeezing split pattern and \$540;

191, \$320; 203, \$315; 237, \$400.

Class 294. 1 baby jolt and 1 plain jolt—Bid 138, \$740 and \$540; 216, \$545.

Class 295. 1 power squeezing split-pattern molding machine—Bid 138, \$450; 216, \$435.

Class 296, 1 sprue cutter—Bid 105, \$825; 163, \$487; 221, \$862; 237, \$875.

Class 297. 1 wet tumbler for brass castings—Bid 171, \$410. Class 298. 1 spur-geared tumbler—Bid 171, \$1,300; 238, \$804. Class 299. 1 pneumatic screen shaker—Bid 32, \$86: 139, \$65; 171, \$800.

Class 300. 1 core-wire straightener—Bid 32, \$700.

Class 301. 1 positive pressure blower for ½ to 1 ton cupola and 1 for 6 to 7 ton cupola—Bid 139, \$1,415; 171, \$1,713.50; 163, \$1,456; 179, \$1,300; 197, \$1,601.

Class 302. 1 motor, 50 H. P., and 1 motor 15 H. P.—Bid 79, \$753; 244, \$746.50.

Class 303. 1 dust exhaust system for grinding and buffing room—Bid 197, \$470 and \$405; 227, \$498.90.

Schedule 5468—Steam Engineering—All Pearl Harbor.

Class 306. 6 optrable glue heaters—Bid 5, \$23.10; 6, \$16; 227, \$44.47; 244, \$64.18 and \$58.

Class 305. 20 Emmert patternmakers' vises, 54 wood spindle-hand screws and 66 clamps—Bid 24, \$102.78; 211, \$396.10.

Class 306. 6 copper-cutting handsaws—No bids.

Class 307. 6 ccales—Bid 22, \$895; 73, \$681.35; 114, \$728.75.

Class 308. 3 chain hoists—Bid 22, \$35; 78, \$47.40; 211, \$25.23.

Class 309. 1 set copper pipe expanders—Bid 211, \$167.

Class 310. Machine tools—Bid 114, \$416.95.

Class 311. 1 millet corn oven—Bid 227, \$134.

Class 313. 15 Hauck burners and 6 Hauck kerosene torches—Bid 96, \$1,062; 141, units; 211, \$2.074; 227, \$1,921.02, part.

Class 315. 3 crane ladles—Bid 171, \$320; 211, \$301.50; 238, \$305.

Class 321. Pearl Harbor—Tool steel treating equipment—Bid 101, \$1,120.85.

Schedule 5469—Steam Engineering.

Class 322. Furnishing and installing one double-chamber, coal-fired core oven in foundary count.

Schedule 5470—Steam Engineering.
Class 322. Furnishing and installing one double-chamber, coal-fired core oven in foundry, naval station, Pearl Harbor—Bid 263, \$10.937.

Schedule 5471—Steam Engineering.
Class 323. Furnishing and installing dust-collecting system in pattern shop, naval station, Pearl Harbor—Bid 197, \$1,759; 210, \$2,275.

Class 324. Furnishing and installing fuel-oil equipment in shops at the naval station, Pearl Harbor—Bid 263, \$20,581.

Schedule 5486—Ordnance—All Newport.

Class 371. 1 sliding head, 26-in. single spindle vertical drilling machine and manipulating tools—Bid 73, \$767 and \$752, alt.; 145, \$415, 163, \$443.50 and \$572, alt.

Class 372. 1 sliding head 21-in. single-spindle drilling machine—Bid 73, \$275; 145, \$220; 163, \$191 and \$280.

Class 373. 1 stationary head, 21-in., 4-spindle drilling machine—Bid 73, \$1,175 and \$1,077, alt.; 163, \$508.

Class 374. 1 drilling machine, complete, 16-in.—Bid 73, \$357; 163, \$475 and \$339.50, alt.

Class 375. 2 13-in. 4-spindle drilling machines—Bid 73, \$377; 114, \$219,75; 163, \$192.

Class 376. 4 vertical tapping machines, complete—Bid 73, \$147; 83, \$250.

Class 370.

Schedule 5487—Construction and Repair.

Class 381. Washington—46 upright transfer units, 12 metal ends, and 3 sanitary or angle iron bases—Bid 1, \$859.36; 231, \$1,078.

Schedule 5488—Construction and Repair.

Class 382. Pearl Harbor—1 fuel oil forge and furnace equipment. A—Bid 182, \$25,995, \$18,584, \$28,262 and \$18,154; 217, \$23.550; 263, \$26,900 and \$32,900, alt.

Class 382. B—Bid 217, \$18,250; 163, \$20,579.

Class 382. C—Bid 182, \$9,226; 217, \$7,250; 263, \$13,590.

Schedule 5490—Construction and Repair.

Class 384. Furnishing and erecting 1 oil-burning annealing furnace, navy yard, Boston, Ma's,—Bid 93, \$4,080; 116, \$6,623.57; 175, \$4,311; 182, \$5,216 and \$4,966; 217, \$7,600; 263, \$4,979.

Schedule 5491—Construction and Repair—All Norfolk.

\$4,311; 182, \$5,216 and \$4,966; 217, \$7,600; 263, \$4,979.

Schedule 5491—Construction and Repair—All Norfolk.

Class 385. 1 oval double-seaming machine—Bid 27, \$1,215; 195,

\$965; 221, \$1,135.

Class 386. 1 deep drawing double-action toggle press—Bid 27,

\$3,825; 195, \$2,878; 221, \$3,208.

Schedule 5492—Construction and Repair.

Class 388. Norfolk—1 42-in. upright high-speed drilling machine—Bid 114, \$1,294.75.

Schedule 5493—Construction and Repair.

Class 389. Brooklyn—1 motor-driven plate planer—Bid 37, \$7.8
and \$6,000, alt.: 105, \$4.785, \$4,760, alt., \$7,795 and \$7,270; 14
\$8,470 and \$11,560; 212, \$8,565.

Schedule 5494—Construction and Repair—All Brooklyn. Class 390. 1 induction motor, type A—Bid 26, \$302.78; 79, \$320: 177, \$243.11; 246, \$310.40. Class 391. 1 board drop hammer, 1,200 lbs., and 1 do., 2,000 lbs.—Bid 27, \$4,185; 139, \$3,784; 195, \$11,900; 225, \$4,330 and \$3,720.

Bid 27, \$4,165; 157, \$5,767, 157, \$1,200; alt.

Class 392. 2 trimming presses for drop forging:—Bid 27, \$1,800; 145, \$1,280; 163, \$1,375; 139, \$1,800; 195, \$1,275; 225, \$1,157,50 and \$997.50, alt.

Class 393. 2 oil-burning furnaces for drop forgings—Bid 137, \$395; 182, \$792 and \$872, alt.; 217, \$905; 263, \$550.

Sabedula \$405—Construction and Repair—Norfolk.

Schedule 5495—Construction and Repair—Norfolk.
Class 394. 4 mechanical variable speed transmission units241, \$22,414.
Class 395. 4 motors with controlling appliances and spare Class 395. 4 motors with controlling appliances and spare parts -Bid 60, \$1,480: 79, \$1,100; 244, \$2,000.

—Bid 60, \$1,480; 79, \$1,100; 244, \$2,000.

Schedule 5496—Steam Engineering—Philadelphia.
Class 401. 1 Universal turret lathe—Bid 25, \$946.85; 114, \$883.50; 139, \$1,035 and \$943; 200, \$1,065 and \$840, alt.; 236, \$931.
Class 402. 1 engine lathe—Bid 73, \$1,360; 114, \$1,217.50 and \$1,283; 145, \$1,498; 139, \$1,656; 200, \$1,278; 209, \$1,700; 234, \$1,407 and \$1,470.

Schedule 5497—Steam Engineering.

Class 403. Furnishing and installing 2 cranes at the navy yard. Philadelphia, Pa.—Bid 139, \$1,400; 189, informal.

